

FRONT-PIECE



These are the first of the many things that have been done to improve the condition of the people of the world. The first of these things is the improvement of the condition of the people of the world. The first of these things is the improvement of the condition of the people of the world.

THE
FAMILY CYCLOPÆDIA

BEING

A Manual

OF

USEFUL AND NECESSARY KNOWLEDGE,

ALPHABETICALLY ARRANGED,

COMPRISING

All the recent Inventions, Discoveries, and Improvements,

IN

Domestic Economy, Agriculture, and Chemistry;

THE

MOST APPROVED METHODS OF CURING DISEASES,

WITH THE

Mode of Treatment in Cases of Drowning, other Accidents, and Poisons,

OBSERVATIONS ON DIET AND REGIMEN ;

A COMPREHENSIVE ACCOUNT OF THE MOST

STRIKING OBJECTS IN NATURAL HISTORY,

Animate and Inanimate ;

AND A DETAIL OF VARIOUS PROCESSES IN THE

ARTS AND MANUFACTURES :

ALSO,

A CONCISE VIEW OF

THE HUMAN MIND AND THE PASSIONS,

With their particular Application to our Improvement in

Education and Morals.

By **JAMES JENNINGS.**

IN TWO PARTS.

PART I.—A. to J.

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1821.

DEDICATION.

TO PHILIP JACOB, ESQ.

MY DEAR SIR,

THE fashion of Dedications has not yet passed away, or you would not hear from me in this public manner. I am aware that had I consulted you relative to such an Epistle as the present, you would have advised me to address myself to some of the *magnates* of our country, who are, or ought to be, patrons of Literature; but I must candidly confess that I have no particular attachment to the *drudgery of obsequiousness* which such addresses too often involve; besides, is not he a Patron whose doors are always open to me, and at whose fire-side I always find a vacant chair?—You know, and can appreciate the labour which has been devoted to the composition of the following Work; and you know also that I have had higher and better aims than those of pecuniary recompense, or, indeed, any other reward which it may be in the power of any mortal, however elevated, to bestow: I have performed a solemn DUTY.—That the name of PHILIP JACOB may be placed by the side of that of the *author* of the FAMILY CYCLOPÆDIA; and that it may be known that you are his *Friend*, are my chief objects in this address; and also to assure you that I am

Sincerely and Faithfully

Your's,

JAS. JENNINGS.

London,
April 3d, 1821.

PREFACE.

THE utility of a **FAMILY CYCLOPÆDIA**, a work which brings to our fire-sides the practical developments of Science, and which comes home to our business and our bosoms, is too obvious to render any observations on its publication necessary. But it may be, nevertheless, useful to present the reader with a general outline of what he will find in the following pages.

They contain plain and familiar directions for curing every **DISEASE** incident to the human body ; and as it is of importance to know when the attendance of a Medical Practitioner is absolutely necessary, in the Author's remarks on every Disease this is invariably pointed out. An account of every useful *Medicine* and *Drug*, is also given, and their doses, with the method of preparing the most common and efficacious ; to which is added, from peculiar sources of information, the composition of almost every Quack Medicine, so that its utility or inutility may be known.

On the subjects of **DIET** and **REGIMEN**, the author flatters himself that his observations will be found explicit and important, and highly deserving the attention of all who desire either to obtain or to retain that most valuable of blessings, good health.

Considering the various **ACCIDENTS** to which Persons are continually exposed, he has devoted much care and attention to the directions for the treatment of such as have taken Poisons, or who have been bitten by a Mad Dog, Viper, &c. ; also to the mode of recovering Persons apparently dead from Drowning ; Escape from Houses on Fire, from Shipwreck, &c. ; the treatment of persons accidentally Frozen, &c. On these heads, he has been very minute ; but he trusts

not more so than the importance of the different subjects warrants and demands.

He has not deemed it necessary to treat of ANATOMY at large ; but has, in a compendium under that article, and under the articles ABDOMEN, BLOOD, HEART, &c. given a succinct account of every principal part of the human body ; without some knowledge of which, no one can be competent to judge of Disease, or of the exhibition of Medicines for its cure. In doing this he has avoided, as much as possible, the use of technical terms ; or, if he has used them, they will be found explained in other parts of the work ;—so that it will form, as much as possible, a *Self-Interpreting Book*.

The Science of CHEMISTRY, that science which has done so much for our convenience and our wants, has not been neglected. The author has endeavoured to embody, in the different articles which relate to this subject, all that is essential in this important branch of knowledge, combining, he trusts, both instruction and amusement. This science is intimately connected with DOMESTIC ECONOMY and the ARTS OF LIFE ; under the articles *Bread, Brewing, Malt, Wines, &c.* he has given such directions, founded on scientific principles, as cannot fail, he presumes, to remove the obscurity and ignorance under which the different processes are at present conducted.

The Arts of AGRICULTURE and GARDENING, including the *culture of Flowers, Trees, Shrubs, &c.* have obtained his careful attention. On these subjects, the most practical, economical, and latest improvement will here be found, together with an account of the various Processes and Implements necessary to these important branches of DOMESTIC ECONOMY.

On the ARTS generally, will also be found a variety of practical Instructions. On *Colour-making, Dyeing, Leather, Paper, Scouring, Tanning, &c.* he has endeavoured to collect all that is *practicable and useful*.

The Subjects of EDUCATION, MORALS, the PASSIONS, and the HUMAN MIND, are intimately connected. A FAMILY CYCLOPÆDIA demanded their Introduction ; and whilst he has explored many of the causes of human error, he has, he hopes, demonstrated its *medicable* nature, and that VIRTUE is the only certain road to happiness.

The principal Diseases to which HORSES and CATTLE are liable are also described, and directions given for their mode of cure, according to the most approved modern practice.

To the numerous subjects of NATURAL HISTORY, viz. *Botany*, *Mineralogy*, and *Zoology*, including under this last head an account of Quadrupeds, Birds, Fishes, Serpents, and Insects, he has paid considerable attention ; and, therefore, can confidently recommend his work as an *Epitome* of all that is at present known of importance or interest in these departments.

In so multifarious an undertaking the author considered it his duty to seek out and apply to the best sources of information, which the present improved state of knowledge affords ; and he has not the least desire to arrogate to himself sentiments or facts which belong to, or have been stated by others ; in various articles in his work his authority is given ; but it may be mentioned here that ALL the Cyclopædias have been occasionally consulted ; the PANTOLOGIA very frequently ; and also the *Cyclopaedia* of Dr. WILKIN. That the works of Sir HUMPHRY DAVY, Sir ARTHUR CLARKE, Sir JOHN SINCLAIR ; of Drs. AIKIN, BATEMAN, BEDDOES, BROWN, DICKSON, HOOPER, KINGLAKE, LEWIS, PARIS, SHAW, THOMSON, URE, UWINS, WILLAN ; of Messrs. BRANDE, CHESELDEN, GRAY, MILLER, PARKES, PARKINSON, TODD THOMSON, WHITE, BLACK'S ORFILA, &c. &c. have been occasionally laid under contribution. But while he states this he may, he hopes without vanity, state also, that more originality upon the subjects of *Disease*, *Diet*, *Regimen*, *Education*, *Mind*, and *Morals*, will be found in his work than is commonly met with in works of a similar nature. In the author's researches, many facts in Natural History have also been verified ; some are now first stated : and many of the processes in the Arts, particularly those of the pharmaceutical and chemical kind, have been carefully directed by his practical experience. He may add, indeed, that scarcely an article will be found in his work which has not received some addition or improvement from his assiduity. He ventures, therefore, to hope, that it will prove a valuable and useful volume.

Relative to the style in which the work is written, he would merely say, that his aim has been to avoid vulgarity on the one hand, and technicality and obscurity on the other ; and he hopes that he has succeeded. He has been fully aware that, in giving

directions concerning disease, and in the preparation and administration of medicines, simplicity and clearness are chief requisites: to these he has endeavoured to adhere. When the statement of any occurrence or fact is accompanied with "it is said," an expression which he has felt it necessary frequently to use, it is meant, generally, to be understood in a less certain and positive sense than when any occurrence or fact is mentioned without such qualification.

Relative to the doses of medicines he has been scrupulously careful in the directions: he is not aware of a single typographical error, in this respect, throughout the work. Some errors of a different kind have, however, notwithstanding all his vigilance, escaped his notice. These are corrected in the APPENDIX, which, therefore, should be, by all means, carefully consulted; and, generally, when the article sought for cannot be found in the body of the work, the *Appendix* will most probably supply it, or direct the inquirer to it.

The Reader is respectfully requested to read attentively the PRELIMINARY ADDRESS and to study the INTRODUCTION.

Directions to the Binder.

The Plate of the PSYCHOGRAPH must face the second page of the INTRODUCTION.

Two Title pages are given, so that the work may be bound in two volumes or in one, at the option of the purchaser: when in two, the work must be divided at the conclusion of the letter J.

PRELIMINARY ADDRESS ;

CHIEFLY TO

YOUNG PERSONS,

AND TO THOSE

ABOUT TO BECOME HOUSEKEEPERS.

HAVING, throughout the pages of the following work, and in the Introduction, adopted the pronominal plural *we*, in delivering the individual sentiments of the Author, merely from convenience, and the avoidance of egotism, it may be here, perhaps, appropriate to quit the figure, and assume a singular personality. I would, therefore, most respectfully request my readers, and the Ladies in particular, to imagine that they are now seated in familiar conversational chit-chat, with the author of the Family Cyclopædia, who has left off all the unbecoming gravity, (if, indeed, he ever had any,) which might tend to render his company irksome ; that they are now, in short, in the company of one like themselves, with passions, antipathies, hopes, fears, and affections ; one who, a man himself, has learnt to feel for all mankind ; and one who, although growing old, is not yet on what has been termed ‘the wrong side of fifty,’ and

“ Who still remembers that he once was young.”

Neither is he in the least disposed to be morose or cynical ; he is quite aware that advice or precepts, how good soever in themselves, are of little avail when given in a spirit of querulousness, and satirical reproof : *kindness* and *benevolence* are his animating principles, of which, in his work, he has endeavoured not, even for a moment, to lose sight. Nor is he a Puritan, or a Saint, in the common acceptation of these terms ; his is no narrow creed ; but he is convinced, nevertheless, that *virtue* is the only certain path to health of body and peace of mind. Nor does he think that his “ easy presence would check one decent joy.” And, although he is somewhat “ versed in the woes and vanities of life,” there yet remain to him many hopes relative to the general welfare of his species ; and he is still an anxious aspirant for collective as well as individual happiness. Indeed

“ Our aim is happiness ; ’tis your’s, ’tis mine,
 “ ’Tis the pursuit of all that live.”

We only differ, perhaps, in the mode by which it is to be obtained.

Having said this, if I thought that any thing more could be necessary, thus lounging in my elbow chair, to obtain attention to this address, and to my work generally, I would add, that, of the talent evinced in the Family Cyclopædia it does not become me to speak; the Public approbation has, however, been already pretty strongly expressed in its favour, for which, of course, I cannot but feel grateful;* but in SINCERITY and ZEAL for the well-being of my fellow creatures, and in anxious wishes for their happiness, I yield to no one. To that sincerity and that zeal, the public have an undoubted right; I claim no merit either in possessing or evincing them: in a publication like the present, the manifestation of such zeal and such sincerity becomes an indispensable duty. That I entered upon the work with considerable fear and trembling; that I was impressed with the great importance and responsibility of the task which I had undertaken; that the whole has been my own undivided labour, except the communication from Mr. OWEN relative to the *Psychograph* in the Introduction; that it has occupied nearly every hour of my existence, for upwards of two years past, besides, of course, much preparatory study and experience, without which no such work could have been properly edited; and I cordially hope that what I have thus sincerely, laboriously, and, to the best of my limited abilities, arranged and written, will be sincerely, cordially, and benevolently received.

I have now said, somewhat reluctantly, all which it may be expedient to say relative to myself; and as my kind visitors, for these I will, for a time at least, suppose my readers to be, are now acquainted with the outlines of my portrait, I will beg the favour of their attention to a few things, for which, perhaps, (particularly if they should happen to be those who are just about to commence the career of life, and who must, of necessity, have *many things to learn*,) they may, at some future period, be grateful.

The first, therefore, to which I request that they would attend, are, a few remarks

On the Building and choice of a House, its Furniture, &c. &c.

Relative to the *Building* of a house, it is a trite saying, that fools build houses, and wise men live in them; and he who is about to erect a dwelling, will act wisely to reflect long, and count the cost well, before he mingles with the mason, and sets the carpenters and the joiners to work. The site of a house, where a choice of its site can be had, is not of trifling moment. In cities and towns, where houses are usually built in rows or streets, their fronts will be found at all points

* The notices which our own Journals have taken of the work need not be specified here. But as those in foreign journals are not very likely to reach my English readers, I may be pardoned for laying before them the following from the *Revue Encyclopédique*, for March 1st, 1821, published at Paris, and one of the first literary journals in Europe.

“On se méfie généralement d'un titre qui annonce tant de choses et souvent avec raison. Cependant la première partie de l'Encyclopédie de famille justifie les promesses de l'auteur: c'est réellement un livre fort utile; on y trouve tout ce qu'il est nécessaire de savoir sur les objets indiqués, moins les détails scientifiques et théoriques qui ne peuvent intéresser qu'une certaine classe de lecteurs.”

of the compass ; but even in these it is always desirable, when possible, that the front of the house should have a southern aspect. But in the country, where there is less occasion for submitting to the fancy or caprice of our neighbours, a southern aspect for the front of a house ought, by all means, to be chosen, unless there should be some very powerful reasons indeed for any other position. The influence of light upon our corporeal, as well as mental, health, is much greater than has been commonly supposed : there is no aspect for the front of a house which permits the rooms to have so much light as one directly south.

Much has been said of the healthiness of houses on the tops of hills, and other elevated situations, which, together with the beauty of the prospect, has often tempted persons to build houses on such spots : but I believe that the southern declivity of a hill, whose summit is considerably higher than the house, so as to break the currents of cold air from the north, is a much more desirable spot, and such as should always be preferred, both for comfort and convenience : for it not unfrequently happens that the difficulty of procuring water, when a house is near the summit of a hill, is great ; or, if obtained, the wells must be dug very deep, and, when out of repair, are attended with considerable expenses ; whereas, on the declivity, or at the foot of hills, water is generally found in abundance, and very near the surface ; it ought to be a rule, when you are about to build a house, to ascertain *first*, that there is a spring of good water on the spot, and that too, which may be most readily come at. A damp marshy bottom for a house should always be avoided, and most of all that which is liable to occasional inundations ; confined bottoms, or dells, where a free circulation of air is prevented, are not desirable ; but the banks of rapid streams, in dry valleys, may always be safely inhabited. Besides the choice of a site for a house, in the country, that of a garden is so essential a requisite, that no house ought to be without one ; the best aspect for a garden will be found, upon the whole, a gentle declivity fronting the south : and no site, how good soever for a dwelling house, ought to be chosen for it, unless it has also ground contiguous and sufficient for a garden. It has been too much the fashion to banish the kitchen garden from the immediate neighbourhood of the house ; this is bad taste : for, besides the pleasures, not a few, in contemplating the growth of plants, if it be near the house, you will be often disposed to sow your own salad, tie up your lettuces, or hoe your peas ; whereas, when at a distance, you may be indisposed for the walk, and will often leave the salad, the lettuce, and the hoeing of the peas, to the gardener.

Having resolved upon a site and the building of a house, care should be taken that it is built with proper conveniences, and according to the number of persons of which the family consists for whom it is designed. If there be no cellars under the basement story, the floors ought to be one foot at least, (three feet are much better,) above the surrounding land. And, if possible, no room, except cellars and closets, should be built without a fire-place, in order, that a constant circulation of air may be kept up, and health thereby promoted. No chimney-board

should at any time be permitted to stop up a fire-place, unless under very peculiar circumstances of health or otherwise. The front of a house, for at least one hundred feet from the wall, should be totally free from every thing in the shape of trees, which exclude the light; shrubs may be, indeed, permitted, but not even these within that distance, if they exceed six feet high. The bad taste of planting trees near windows, in the fronts of houses, in most of the villages contiguous to the metropolis, cannot be too strongly deprecated. These trees not only exclude that exhilarating stimulant light, but they harbour aphides and other insects, which are at all times unpleasant, and very often, to our garders, not a little mischievous. At suitable distances from the house, eastward and westward, as well as northward, trees for shelter may, however, be permitted; and of these, perhaps, the pine, or laurel tribe will be found the best; which being, besides, mostly evergreens, are, on this account, to be preferred.

No room in a house ought to be less than eight feet high; ten feet is better, and twelve better still. In building a house, the first requisite is to take care that the entrance is open and spacious, and the next that the stair-case is of easy ascent, light, and that every room in the house has a separate entrance, either from the entrance-hall, the stair case, or in passages communicating with it.

No window in a house should be made without having either a moveable sash, or a casement, in order that ventilation may be always readily made. The size of windows is also deserving some consideration. For a sitting room, fourteen feet by fifteen, one window, six feet high, and four feet eight inches wide, will be enough; but in such a room, two windows, three feet wide, and six feet high each, will be more convenient, and have a much better effect: larger rooms require two windows. Door-ways and doors should never be less than six and a half, or seven feet high. Their width must be regulated by their uses.

The materials with which a house is built are also deserving some consideration. Ponderous compact stone is, of course, durable, but such stone being also a good conductor of heat, the rooms of houses built with such stone, other things being equal, will be colder than those whose walls are composed of porous-stone, such as that of Bath, or bricks. For the same reason a sitting-room floor ought always to be of wood. See BUILDING, CHIMNEY, FIRE-PLACE, NURSERY, &c.

Varandas, or shades, before windows, in the front of a house, are become very fashionable, and in the summer and in hot weather are useful and agreeable; but if immovable, as they generally are, their convenience is more than counterbalanced by the gloom which they produce in the winter season, when too much light cannot be had.

In *furnishing* a house much will depend upon your own taste and fancy, and little useful can be suggested on this head. On the present fashion of suspending drapery and curtains before windows, so as to exclude almost totally the light, I beg leave respectfully but strongly to protest. In London, in particular, where, from the clouds of smoke continually hovering in the atmosphere, so much light is necessarily

prevented from reaching us, surely to exclude it still more by blinds, curtains, &c., is of all things the most preposterous. The exhilarating properties of light are not, in this metropolis, sufficiently appreciated; I would most seriously solicit the citizen's attention to this subject. See BED and BED-ROOM.

Household Management, &c.

On this subject I would address myself to the LADIES: for to them this department of domestic economy more immediately belongs, and to them it is, in almost every respect, most appropriate. Those who have ascended the hill of life have often had great reason to regret that before they set out, they had neglected to make themselves acquainted with the road, and the probable difficulties which they might encounter in their way. The young and inexperienced, in ascending this hill, are too apt to suppose that fine weather, music, and dancing, and the gayest society, will invariably await them, and that it is folly to provide for a stormy day, when there is every appearance that the weather will be serene, our company delightful, and all the aerial beings of our fancy attendant on our steps. But, alas! how different do we not find the road, how devious, how strange the company, and how many difficulties unforeseen and unexpected, start upon us at some sudden winding! It is true, that the greatest knowledge and foresight will not always prevent the evils which beset our path, but a careful study of our own wants, and the wants and demands of those around us, will often make that tolerable, which coming unexpectedly, and when we are off our guard, is frequently intolerable, grievous, and overwhelming. If, therefore, my young friends, to whom I am now more particularly addressing myself, will not consider *Household management*, and the *cares* of a *family* beneath their notice, they most certainly are not, *before* they actually enter upon such a charge, sure I am that such study will amply repay them for their trouble. To all rational recreation I am a most decided friend; and even music and dancing may be occasionally interposed, but the grand business of life, the *study and practice of our duties*, demand our first attention, and to these every other pursuit ought to, and must, give way. In this reading and admiring age, an age of admitted, or supposed refinement, a lady will hardly be considered fashionable, unless she has made herself acquainted with the last new novel, or has seen the last new tragedy, and some of the most celebrated performers. But such *diffusible stimulants*, to adopt a medical expression, should be only taken occasionally, and in small doses at a time. In over-doses, they exhaust the excitability, and leave us the patients of chagrin and ennui. Not so the *durable stimulants*, our DOMESTIC DUTIES: these leave no sting behind them; but, on the contrary, they gently wear down the excitement, and produce that agreeable state of both mind and body, denominated good health.

Besides, the study, knowledge, and practice of domestic duties are not only necessary to the female, and especially to the mistress of a family, but they are to her own individual happiness essential: For no husband, how ever affectionate, can long be happy if his domestic concerns be neglected by her to whom he looks as the directress and the guide; and *wastefulness*

from such neglect, is most commonly the result. It does not often happen, that what the mistress herself neglects, a servant will be found provident enough to perform. Exceptions will no doubt be found; but those who are wise, will not depend implicitly upon servants, well knowing, that vigilant but kind superintendence is the best course.

The art of *cookery* is an art by no means to be despised by the student of domestic economy. It is true, our cookery books are in general very badly compiled, and without the least pretensions to science;* but for this reason there is the greater necessity that the intelligent female should exercise her discretion and her judgment in this art. Scarcely a form for the preparation of one dish is to be found in such books, on which the science of an intelligent female cannot improve; and she should invariably bear in mind, that *simplicity* in cookery, as well as in medicine, and, indeed, in most other things, is always to be kept in view; and that we cannot well calculate the effect of many heterogeneous mixtures when taken into the stomach, and, therefore, such mixtures should be, as much as possible, avoided.

It has not been my aim to make this work a succedaneum for a cookery book; but under the articles BREAD, BREWING, &c. I have endeavoured to lay down such practical directions, blended with science, so that any person may, with a small share of discretion, soon become a tolerable proficient in those arts; and, I think, in such a way too, as will soon enable him to outstrip those who have never been taught scientifically on such subjects. But on this, as well as upon every other occasion, when consulting my work, I entreat the reader not to surrender his reasoning faculties, but to exercise them, and think for himself.

The *management of Income*, in this department, is also of the first consequence. Every person should make it a point to live within his income, if possible, let that income be what it may. It should also be an invariable rule in domestic economy, *never to obtain any thing on credit*: for those who take credit, generally pay an enormous interest for so doing; ready money is the life of trade; and tradesmen who give credit will, in general, take care that their probable losses shall be paid by those who are obliged to have recourse to this expedient. The errors and mistakes in accounts are, by avoiding credit, also avoided; these errors and mistakes are often productive of serious disputes. It is advisable also to have bills and receipts for things which are paid for even with ready money. These operate as checks upon servants, and also enable the mistress to keep her accounts with more exactness.

Under the article *Economy*, I have stated the expenses of a family having an income of 400*l.* per annum, but as the income of the great majority of persons in this country is much below that sum, a different statement will be necessary. This must, of course, be formed by the individual himself. And most certainly, a person whose income is not derived from actual property, which will descend to his family at his

*From the censure of cookery books, I desire specifically to exempt a work entitled "*A New System of Domestic Cookery, by a Lady,*" printed for Murray. It is unquestionably the best cookery book extant.

death, will act both prudently and wisely, in laying by a portion of his income, however small, in order to provide the best he can for those who are near and dear to him, and whom he may leave behind him. This may be sometimes, perhaps always, best done by the payment of an annual sum, so that, at his death, his family may receive a valuable consideration. The method of effecting this may be learnt at any of the Life Insurance offices.

I have, under the article PHARMACY, enjoined the keeping of scales and weights for the purpose of weighing medicines ; but a pair of scales and weights should also be kept of a larger kind, for the purposes of domestic economy. These scales ought to be sufficiently large to weigh from twenty to thirty pounds weight, and, of course, the weights should be suitable to them. A fourteen-pounds, a seven-pounds, a four-pounds, a two-pounds, and a one-pound weight, this last, with its usual subdivisions, will be in general sufficient. The beam and scales should be suspended in some place, the pantry for instance, to which ready access can be had. For heavier weights, steel-yards may be used, but they are not to be depended upon.

Nothing more effectually contributes to the comforts and well-being of a family than good order ; to this end, all the meals ought to be regular, and at stated hours : this regularity most commonly depends upon the mistress of the house.

As a conclusion to this part of my address, let us hear what an elegant and sensible writer says on the *choice of a wife* ; it affords an apt lesson for both sexes.

“Taste, manners, and opinions, being things not original, but acquired, are not of so much consequence as the fundamental properties of good sense and good temper. Possessed of these, a wife who loves her husband, will fashion herself in others, according to what she perceives to be his inclination, and if, after all, a considerable diversity remains between them in such points, this is not incompatible with domestic comfort. But sense and temper can never be dispensed with in the companion for life : they form the basis on which the whole edifice of happiness is to be raised. No man ever married a fool without severely repenting it : for though the petty trisler may have served well enough for the hour of dalliance and gaiety, yet when folly assumes the reins of domestic, and especially of parental control, she will give a perpetual heart-ache to a considerate partner. On the other hand, there are to be met with, instances of considerable powers of the understanding combined with waywardness of temper sufficient to destroy all the comforts of life.

“The original purpose for which the sex was created, is said, you know, to have been for the purpose of providing man with a *help-mate* ; yet it is, perhaps, that notion of a wife, which least occupies the imagination in the season of courtship. Be assured, however, that as an office for *life*, its importance stands extremely high to one whose situation does not place him above the want of such aid ; and fitness for it should make a leading consideration in his choice. Romantic ideas of domestic felicity will infallibly, in time, give way to that true state of

things which will shew that a large part of it must arise from well-ordered affairs, and an accumulation of petty comforts and conveniencies. A clean, quiet fire-side, regular and agreeable meals, decent apparel, a house managed with order and economy, ready for the reception of a friend, or the accommodation of a stranger, a skilful, as well as an affectionate nurse in time of sickness.—All these things compose a very considerable part of what the nuptial state was intended to afford us; and without them, no charms of person or understanding will long continue to bestow delight. The arts of housewifery should be regarded as *professional* to the woman who intends to become a wife; and to select one for that station who is destitute of them, or disinclined to exercise them, however otherwise accomplished, is as absurd as it would be to chuse for your lawyer, or physician, a man who excelled in every thing rather than in law or physic.”*

In fine, I would add relative to the treatment and behaviour to your guests, whether when sitting at the hospitable board, or otherwise, that nothing betrays a greater want of sense and good manners, than for either the husband or wife to indulge in bickerings and taunts, unpleasant enough at all times, and more especially so when a third person is present. We have no right to make that third person uncomfortable. It has been said that too much familiarity breeds contempt; perhaps in the married state, did both husband and wife continue to preserve towards each other a sort of deference which is too often laid aside, we should hear less frequently of the unhappiness of that state into which many are eager to enter, and from which not a few are afterwards as eager to escape. It is almost superfluous to mention, that persons who are most esteemed for urbanity and courtesy to their guests, are not those who give the most sumptuous entertainments; but rather those who, in a quiet, unostentatious way, endeavour to render their company and house agreeable, by a variety of little nameless attentions, which we all feel that we want, but for which many are unwilling to ask. Even a pair of slippers brought unasked for, just before retiring to rest, indicates a mark of attention to our comforts which will not be readily forgotten.

Of moral Conduct, and the Management of Servants

It may not be inappropriate to say a few words. I have, throughout my work, avoided trenching on the province of the divine for many and important reasons, and as this book will necessarily fall into the hands of persons of various modes of thinking relative to Religion, it is not my desire or intention to advocate or enforce any particular creed: such must be left to the deliberate judgment of the individual, which I respect too much to interpose on this subject any opinions of my own. But, whatever sentiments may be entertained on religious belief, and the mode of religious worship, on the *imperious necessity of virtuous actions* every one who reasons justly is agreed; and genuine piety will always claim our respect; but it will be well if persons who set an inordinate value upon the forms and ceremonies of external religion, do not lose the substance of virtue in following what, it is to be feared, is too often but its shadow.

The poet has long ago told us that

“ In Faith, and Hope, the world will disagree ;
But all mankind's concern is CHARITY.”

POPE.

From our moral duties, therefore, no one can, by possibility, be exempt ; and the practice of them requires our constant and vigilant attention. Not, however, the vigilance of giving pain to others or to ourselves. Nor can I think society at large well employed in framing penal statutes, and proscriptive enactments. We have too long seen the inefficiency of these not to desire a better and a more effectual course. The best fetters are the fetters laid on us by *benevolence* and *kindness* ; and the most efficient and reforming *coercion* is that *force of circumstances* which, without violence, leads us to act most agreeably for our individual as well as our social and collective happiness. To the formation of such circumstances every one may contribute something. The master and mistress of a family very much indeed ; and in this the good and wise of every sect and of every party may, and should, unite.

I intreat you most seriously to consider, that the moral conduct of the master or the mistress of a family cannot be too circumspect : for both children and servants will, from their relative situation, often necessarily imitate it. Perhaps one of the most dangerous and inconsistent modes of action, in civilized society, is the common method of excluding visitors by ordering servants to say that their master or mistress is *not at home*, although the servants, at the same moment, know that such master or mistress is sitting calmly by his or her fire-side. Surely of all errors in human conduct that of systematic falsehood is one of the worst. In the present instance, what is the effect of such conduct upon servants, concerning whom we are hearing such constant complaints ;—of their worthlessness, of their lying, and their frauds ? you teach them to tell falsehoods, not for their own pleasure or convenience, but for yours ; and after having done this repeatedly, is it at all to be wondered at, that, when an opportunity offers, and temptation presents, they will tell them to suit themselves ? The thing is so perfectly consequential, so completely agreeable to all the laws by which the human mind is governed, that the chance, under such circumstances is, not that your servants will be liars, but that they should be found, at any time, telling the truth. Such mode of excluding visitors should, therefore, never be adopted.

Allied to this kind of conduct is that *imperiousness* which too many masters and mistresses evince towards their servants ; which would indicate that they consider themselves as belonging to a superior order of beings ; and that the servant is entitled to nothing in the way of civility, but what they choose, in their capricious generosity, to bestow. But if the doctrine of *duties* incessantly inculcated in my work, be correct, and if the laws which govern the human mind are not set at nought, a more erroneous, a more mischievous method of treating servants could not enter into our contemplation. Servants, you must remember, are reasoning animals as well as yourselves ; that accident has placed you as their master or their mistress,

and another accident may reverse the scale ; how then would you feel, and what would be your reflections on such imperious conduct ? All artificial distinctions in society are, in their nature, essentially evil ; although, at present, such distinctions are necessary ; but it is our duty, nevertheless, to make such servile situations as agreeable as possible to those who are obliged to submit to them ; and it is not only our duty, but it is also our truest interest so to do : for kindness and benevolence will often command what imperiousness and hauteur never can enforce.

The choice of servants, more especially where there is a family of children, is a most weighty and important concern. It will be difficult to lay down rules to suit different persons ; but honesty, sobriety, industry, integrity, and, intelligence, are required in all ; and most of all in those under whose immediate superintendance the children are placed. The fashion of *nurseries*, in the upper part of the house, where children are usually, at least in large cities, confined a great part of the day, and brought down occasionally to the parlour to be exhibited as a kind of raree show, is, unquestionably, bad, unless we prefer the inculcation of the manners and opinions of our servants to our own, and the sooner it is departed from the better : for, by these means, the manners and opinions of the servants are more certainly imbibed, and those of the parents put on only as a kind of holiday suit. In truth, if we would have our children imbibe our manners and our opinions, they should spend much of their time with us, and not be secluded from us in the nursery ; nor be lounging, with other servants and the nursery-maid in the street, the park, or other places of similar recreation.

The management of servants is by no means an easy task, as the tempers and dispositions of mankind vary so much ; but, in general, you may be assured that candour, kindness, and affectionate behaviour, tempered with discretion and firmness, avoiding at the same time too much familiarity, will more readily and certainly command that obedience which you are desirous to obtain ; and although you may occasionally find tempers and dispositions which will puzzle a philosopher to manage, being exceptions not rules, you must not, for this reason, play the tyrant, become unfeeling, and make yourself, as you will be, most assuredly, *hated*, or, at least, disliked, by your whole household, although their interest may prompt them to an hypocrisy at once both dangerous and disgusting. *The human mind may be more easily led wrong than driven right.* See the article MIND.

Nothing, perhaps, endears the mistress of a family to her female servants, more than her attentive listening to their individual wants, their little comforts and mental agitations, and administering at the same time proper advice and consolation ; it is an office for which she is peculiarly well fitted, and which she may often perform with much advantage. The same observation applies to the master and his male servants. If the master has taken care to inspire his servants with affectionate respect, which it is his duty to do, he will have many opportunities of consulting his servant's happiness, and mediately also his own, which the tyrannical and unfeeling master never can obtain. In illness, of course, no humane master or mistress will neglect their ser-

vants, or suffer them to be neglected ; but attention to servants in sickness being a part of your duty, I have thought it might be useful to remind you of it here.

On the Management of Children.

If the responsibility in your treatment of servants be great, how much more important, how much more responsible are not the treatment and instruction of children, and most of all of your own children, over whom you are enabled to exercise unlimited control, and to whom you must be, for many years of their existence, almost every thing upon earth !

That children are born with various dispositions, or the germs of such dispositions, is undoubtedly true ; but it is also true that, by due management, these may be so changed and meliorated by the attention of a parent, or by other proper circumstances, that not only little blemishes may be smoothed away, but even those things which more offensively distinguish the child may, by proper discipline, become the characteristic ornaments of the man ; on the treatment which the child receives from his parents, during the infantine stage of his life, depends much of the misery or of the happiness which he may experience throughout his future life ; and it should never be forgotten, that *the temper of a child is formed in the early days of infancy.**

If on the one hand, every little sally of passion and impatience is immediately and properly controlled ; if those things which are admissible are regularly permitted, and those which are improper are as regularly withheld, the wily little creature will soon learn to distinguish that which is allowed from that which is prohibited. But a melancholy reverse will be found, if, on the other hand, no consistency is observed in his management : if at one time the slightest indulgence is refused, and at another the most extravagant and even injurious cravings are satisfied, just as the caprice of the parent may induce him to gratify his ill humour by thwarting another ; or to amuse his moments of ennui by playing with his child as a monkey, and exciting it to those acts of mischief and audacity, for which, in the next moment, it may suffer a severe correction. The effects of such capriciousness are most serious : continually undergoing either disappointment or punishment ; or engaged in extorting gratifications which he often triumphs at having gained by an artful display of passion ; his time passes on until at last the poor child frequently manifests ill nature sufficient to render him odious to all around him, and acquires pride and meanness sufficient to render him the little hated tyrant of his playfellows and inferiors. No one will for a moment contend that such education (I wish my readers to consider that by education, I here mean the whole concourse of circumstances which form the human character) is not erroneous. But you may ask when children do wrong are they not to be corrected ? I reply most certainly ; correct them, (i. e.) direct them right, and prevent their doing

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wrong; and take especial care that your correction is indeed *correct*, for these young reasoners are as expert as ourselves in detecting fallacies; and, most of all, take care that *capriciousness* does not make a part of your moral process; but punishment for having done wrong will do them harm, and this in proportion to the frequency with which it is inflicted: for punishment, (bodily or mental pain,) will be invariably and as much as possible avoided; and the fears of such pain will make them both liars and hypocrites. Children should be, above all things, taught candour and the undisguised declaration of their feelings: but whilst they are operated upon by the apprehension of pain, such candour and undisguised declaration of their feelings will be prevented; their chief business under such circumstances will be, the practice of deceit: of preventing you from becoming acquainted with the errors which they have committed. No child will be candid without kindness; and it will be difficult to persuade any child, that, in putting him to bodily or mental agony, you have his happiness at heart: those who remember, as I do, some of the well-meant, though mistaken harshnesses of a father, will more fully understand these observations.

While I argue against punishment, *improper indulgence* is not less carefully to be guarded against; but it not unfrequently happens that these opposites are exemplified in the same parental characters, than which it is scarcely possible to conceive means more effectual to form a human being in an erroneous mould.

The necessity of proper moral culture can scarcely be too much insisted upon; but there is another view in the management of children which is important, namely, that of their food, unlimited indulgence in which is a source whence a multitude of diseases arise, and against which indulgence an affectionate mother cannot be too much on her guard; on this subject she is very liable to err; it will require her utmost firmness and resolution to withstand the impressive and asking importunity of a darling on which, perhaps, all her hopes are centered; but, nevertheless, her reason and her judgment must not, in this case, be suffered to slumber.

The foundation of various evils is often laid in the first months of the child's life, by repeatedly distending its stomach with the various mixtures employed as substitutes for that food which nature has prepared for it, and of which it never suffers a deprivation without danger of the most distressful consequences. To you

Who are a MOTHER that most holy name
 When heaven and nature bless,
 I may not vixtly prostitute to those
 Whose infants owe them less
 Than the poor Reptile owes
 Its gaudy parent fly!*

To you who are a mother, I would say, let no consideration on earth,

but ill health, tempt you to give up the sacred charge of suckling your own child.

When, unhappily, the child is obliged to submit to this cruel privation, the privation of its mother's breast, the food which is substituted should be simple, and, approaching, as nearly as possible to the mother's milk. Goats' milk, asses' milk, and cows' milk, are, probably, the best substitutes; these should be given freshly drawn from the animal, slightly warm, and unmixed with vegetable substances, and in frequent but moderate quantities. On this subject our article *INFANCY* should be by all means consulted.

As the child advances in age, still must it be remembered that its health will depend on the simplicity of its diet. The variety in its chief meal should never extend beyond two dishes; the one consisting of vegetables dressed in the most simple mode, or of fruits dressed in the form of puddings: baked pastry is always, however, to be avoided; and the other of animal food, dressed as plainly as possible. Pickles and spices are wholly inadmissible. I cannot take my leave of this subject without observing, that in many cases of infantine diseases, when there is manifest debility, want of appetite, &c., beef tea offers a powerful remedy, and should by the anxious parent never be forgotten.

The preparation of food for the sick, attentive nursing, and the administration of medicines

Are peculiarly the province of the female, and in performing these offices well, the comforts and restoration of the patient very materially depend. Nor are the soothing of the mind in this work of kindness to be overlooked; such offices, to the honour of woman, are in general well performed; a modern poet most happily apostrophizes the female sex thus:

When pain and anguish wring the brow,
A ministering angel thou!

And who is there, having lain on the bed of sickness, that cannot bear witness to its truth? But it nevertheless does sometimes happen, for want of experience, that many ladies are prevented from being as useful in sickness as they anxiously wish to be. To supply, in some degree at least, this deficiency, shall be the object in concluding the present address.

Most persons have imbibed peculiar rules or notions relative to food, which they are naturally enough disposed to apply upon all occasions to themselves as well as others, and that too not only in health but in disease. Now, unless a nurse has more judgment than usually falls to the lot of unscientific persons generally, the chances will be that the application of such rules in sickness will do mischief. I do not know whether one of the most injurious of all errors relative to this subject be not that which supposes that, in sickness, it is necessary for the patient to be continually taking something; and hence he is not unfrequently urged to take that for which he has not the least inclination, and which, when taken, will very probably do him harm. Persons who are lying in bed

and motionless, even in health, require, comparatively, little food; and in disease it often happens that quiet, and an abstraction of the ordinary food for a few days, provided, of course, that suitable medicine or extraordinary food be properly administered, will most effectually insure convalescence. Neither should a provident and attentive nurse invariably gratify every inclination evinced by the patient for food and drink: for although many of such desires may be and should be complied with, there are others where such compliance may be dangerous and sometimes even fatal. These observations are applicable to adults; but they should be most scrupulously attended to in the diseases of children: for, in these, the affectionate mother will be often tempted to do that for her child which both the physician and her own understanding may condemn.

In the preparation of food for the sick, no consideration is more important than simplicity. That food which consists of many articles, or that article of food which consists of many different ingredients, should, in general, be avoided for sick persons: the chances are that such will produce unpleasant consequences when taken into the stomach. The same rule applies to drink.

Although acidulous condiments, such as currant jelly, &c., are sometimes not without their uses, yet sugar in almost every shape seems peculiarly unfitted to enter the stomach when disease is present. How much the diseases of children are aggravated by excessive indulgence in sweetmeats, I am not prepared to say, but that they are frequently injurious I am perfectly assured.

For the quenching of *thirst* in disease, simple water, or toast and water, will be generally found the best liquid. It may, however, be occasionally acidulated with lemon-juice. Of all fruits in sickness, I believe the lemon and the orange are by far the best: our own summer fruits are by no means so good; nor can I, except under very peculiar circumstances, advocate their employment.

It may seem a work of supererogation to give directions for making *gruel* from groats; but as gruel suits the stomach in various states of disease, every female ought to become acquainted with the best method of making this useful and, I may add, valuable preparation. It should always be made from whole groats bruised, not from what are called half groats; nor from oatmeal.

Barley water is another of those preparations which are required in sickness. Its mode of preparation will be found under **BARLEY WATER**.

The preparation of *Tajjoca* and *Sago* is mentioned under their respective heads. And *Beef tea*, a powerful and important medicine, should be made as directed under that article. The preparation of *Arrow root* is similar to that of preparing starch for domestic purposes. Having mentioned starch, I regret that this article is not kept in the shops perfectly pure, and free from colouring matter or other admixture; in its pure state it offers an occasional variety of food which would prove agreeable to the sick.

In the *administration of medicines* too much care and circumspection cannot be observed. The articles **DOSE**, **MATERIA MEDICA**, and **PHARMACY**, should be assiduously consulted, as well as the several separate articles relative to diseases, in the order of the alphabet, and also the article **INFANCY**.

And although I have endeavoured to furnish my readers with the most necessary and important information relative to the cure or alleviation of disease, it should be borne in mind, that from the diversities or idiosyncrasies of constitutions, cases will occur which puzzle the most eminent of the faculty, and with which the domestic prescriber must not of course contend, but apply at once to the best advice. And let the great responsibility of giving medicine at all times never be forgotten. It is also much better in disease to give nothing, than to give that of the efficacy and utility of which you are not fully aware. In truth, as much knowledge is required to determine when medicine ought not, as when it ought to be given. The giving it wantonly or heedlessly deserves, therefore, the severest reprehension. I have, made these observations in other parts of my work, but they can scarcely be repeated too often.

Besides the proper administration of food and medicine to sick persons, the administration or abstraction of mental stimulants must by no means be neglected. On the due management of these will very often depend the successful recovery of the patient. And amongst these, the grateful stimulus of *Hope*, is one of the chief. A nurse, or mother, or a friend, who is solicitous for the recovery of the patient, will take care that it is exhibited in the tenderest and kindest way. In fact, in disease, the mind requires nursing as well as the body. On this subject, however, we appear to have still much to learn.

INTRODUCTION.

IN order to render the consultation of the **FAMILY CYCLOPÆDIA** as easy and convenient as possible, and to furnish the reader with a general outline of its chief contents, it has been deemed expedient to prefix the following familiar exposition. In doing this, we have arranged our observations under seven sections, namely:

EDUCATION AND MORALS.

DOMESTIC ECONOMY, INCLUDING

HORTICULTURE AND AGRICULTURE.

NATURAL HISTORY, CONTAINING BO-

TANY, MINERALOGY, AND ZOOLOGY.

ACCIDENTS.

CHEMISTRY, INCLUDING THE PREPA-
RATION OF MEDICINES.

ANATOMY, DIET, REGIMEN, AND ME-
DICINE.

ARTS AND MANUFACTURES.

EDUCATION AND MORALS.

THE difference between man in an uncivilized state, and man in the most polished and refined society, is, perhaps, greater than between uncivilized man and some of the more perfect animals; the superiority of the savage often consisting chiefly in his being endowed with speech. But MAN is, nevertheless, a being of a very superior order: his superiority, however, consists principally in his capacity for *being educated*; for being made capable of the most extraordinary actions, and of contributing greatly, not only to his own individual comforts and happiness, but to the comforts and happiness of those around him; and also of conveying a knowledge of the means by which he may obtain those comforts and that happiness to the most remote posterity. Without Education, man is an insulated being, connected to society by few ties, and wholly unacquainted with his duties. We, therefore, merely utter a trite truism when we assert, *in order that a man may become a good member of society, it is necessary that he should be educated*: no one becomes good or virtuous by accident.

But the education to which we here allude, is not only the education usually called such, which is obtained, for the most part, from Schools and Universities, or through the medium of books, but also that course of circumstances which surrounds the child from his birth, and attends upon him throughout his future life, moulding his thoughts and

directing his actions, and which makes him often either the best or the worst of his species. All these constitute our *moral education*, and to these, to the modification of present, or to the introduction of new circumstances, it is, in order that man should “run the great career of justice,” that our efforts ought to be incessantly directed. This education consists not in *learning*, commonly so called, (although to know one language well, ought, certainly, to form a part of all education, as a means,) but in *imparting a knowledge of our duties, and in fitting us for the performance of them*. And it will be found that although much may be done by applying ourselves early to the formation and training of the infantile intellect, yet that, such is the progressive nature of the human mind, we never cease to learn or to acquire; in truth, the wisest of men are *always learners*.

In order, however, to understand what moral education ought to be, our attention must be directed to the nature of the human mind. We have entered somewhat at large, under our article *MIND*, into this subject, to which the reader will refer; but we have been favoured with a description of the *PSYCHOGRAPH*,* by its inventor;† and, as it may probably assist many persons in more readily understanding mental phenomena and operations, we avail ourselves of his friendly communication to lay it before our readers.

“The *PSYCHOGRAPH*, an engraving of which accompanies this description, may be either a metal plate or wood frame, with ten slides, each slide representing a faculty or quality, or the germ of it, of a human being at birth. The slides are divided into parts, the first and last of which, on each slide, denote the extremes of that particular faculty or quality belonging to, or constituting, a part of human nature. The interval between these extremes is, in nature, infinitely divisible. In the engraving, however, the division has been carried merely to 100 parts, which is sufficient for the purpose for which the *Psychograph* has been designed. Three of the slides, describing *Sensibility*, *Reflection*, and *Judgment*, are represented as drawn out at unequal distances, to shew the construction of the instrument.

“The object of the *Psychograph* is to exhibit the subject of human nature in a tangible shape, as it were, to those who have been little accustomed to abstract inquiry; and, by this means, to direct their attention to facts, which, without the aid of some such sensible representation, their minds might not so easily apprehend; or from which they might not otherwise be led to deduce any useful practical conclusions. In this view, it is of little consequence whether the faculties and qualities which we have predicated of a human being, are precisely in conformity to nature, or whether they are really more or less in number, or whether they shall be designated by the names given to them, or by any other terms. In these respects the *Psychograph* may be, and no doubt is, very defective; it pretends to no accuracy in such points, because accuracy cannot at present be attained; but it is a sufficient approxima-

* From *ψυχη*, *anima*, or the soul, and *γράφω*, *scribo*, to write.

† ROBERT OWEN, Esq. of New Lanark.

tion to nature for our present purpose. For instance, human nature consists of a certain physical conformation, which must possess some degree of bodily strength; sensibility, or power of feeling; the germs of more or less natural courage; perception; reflection; memory; imagination; judgment; affection for others, and attachment to self. And it is evident that individuals possess by nature these different faculties and qualities in various degrees of strength and weakness, of perfection and imperfection.

"This is all that the Psychograph professes to delineate. We may now briefly advert to some of those important truths, which little more than a bare inspection of it is calculated to suggest to the mind.

"Seeing then that there is so wide an interval between the extremes of each faculty and quality, and that this interval is infinitely divisible, it is improbable that any two human beings have ever been endowed with any one of these faculties or qualities precisely in the same degree, since the creation of man; but when the number of these faculties, which enter into the combination of a human being, is taken into consideration, it becomes highly probable that no two infants ever have been, or ever will be, born alike.

"Certain proportions and combinations of these powers produce, in the individual, the highest degree of general excellence of character; other proportions and combinations create the most defective mental capacity, and the worst dispositions; while other proportions and combinations form an infinite variety of natural character between these two extremes. These faculties and qualities grow as the child advances in age, and by training and instruction the growth of any of them may be retarded or encouraged, and thus the natural combination may be materially modified. When this knowledge shall be raised to the rank of a science, and its principles applied to practice, the human character may be so improved in every individual that, compared with the past or existing generations, the new race of men will be regarded as superior beings. This science may be called *the Science of Training and Instruction, or the Science of the Influence of Circumstances over Human Nature*; and will be of far more real value to mankind than all the other sciences united. By means of its practical application, the natural powers and qualities of each individual may be so directed and modified as to produce that combination which is best for the individual and for society. The child, however, can have no control over the formation of the particular powers and qualities which belong to him at birth; nor over the circumstances which, through infancy and childhood, determine the peculiar direction and modification which these powers and qualities shall receive.

"Why then is *Punishment*, for the correction of moral error, awarded to human beings? Is it possible that human nature can become a fit subject for punishment of any kind? Has it ever been, or can it ever be other, than an instrument of cruelty and of the grossest injustice? Experience has proved that punishment never has attained its object. Facts, open to the inspection of every one, likewise prove, that by other methods, which preclude all the evils created by punishment, (and they

are incalculable,) more may be accomplished in a few years for the improvement of the moral well being of society, than has been effected by punishment through the past period of man's existence.

"If the Psychograph, imperfect as it is, shall aid, even in a slight degree, the dissemination of correct views on this pre-eminently important subject, the object for which it was devised will have been attained."

The articles in our work, which relate to Education and Morals, are very numerous; we may mention

<i>Ambition</i>	<i>Commerce</i>	<i>Evil</i>	<i>Imagination</i>	<i>Political</i>
<i>Amusements</i>	<i>Company</i>	<i>Example</i>	<i>Infancy</i>	<i>economy</i>
<i>Ancient languages</i> [ing	<i>Conscience</i>	<i>Experience</i>	<i>Innocence</i>	<i>Prejudice</i>
<i>Ancient learn-</i>	<i>Content</i>	<i>Fate</i>	<i>Insanity</i>	<i>Pride</i>
<i>Anger</i>	<i>Cotton-mills</i>	<i>Flattery</i>	<i>Jealousy</i>	<i>Prosperity</i>
<i>Anxiety</i>	<i>Counsel</i>	<i>Foreigner</i>	<i>Joy</i>	<i>Punishment</i>
<i>Application</i>	<i>Cruelty</i>	<i>Fortitude</i>	<i>Knowledge</i>	<i>Reason</i>
<i>Attention</i>	<i>Curiosity</i>	<i>Friendship</i>	<i>Language</i>	<i>Remorse</i>
<i>Benevolence</i>	<i>Deceit</i>	<i>Generosity</i>	<i>Law</i>	<i>Riches</i>
<i>Bigotry</i>	<i>Desire</i>	<i>Genius</i>	<i>Lie</i>	<i>Ridicule</i>
<i>Blame</i>	<i>Despair</i>	<i>Glory</i>	<i>Love</i>	<i>Right and</i>
<i>Body</i>	<i>Difference of</i>	<i>Good</i>	<i>Master</i>	<i>wrong</i>
<i>Breeding, good</i>	<i>opinion</i>	<i>Government</i>	<i>Memory</i>	<i>Satire</i>
<i>Brute</i>	<i>Dispatch</i>	<i>Grammar</i>	<i>Merit</i>	<i>School</i>
<i>Candour</i>	<i>Doubt</i>	<i>Grief</i>	<i>Mind</i>	<i>Self-love</i>
<i>Capacity</i>	<i>Duty</i>	<i>Habit</i>	<i>Morals</i>	<i>Solitude</i>
<i>Cause</i>	<i>Education</i>	<i>Happiness</i>	<i>Mother</i>	<i>Suicide</i>
<i>Chance</i>	<i>Employment</i>	<i>Hatred</i>	<i>Motive</i>	<i>Sympathy</i>
<i>Character</i>	<i>English lan-</i>	<i>History</i>	<i>Novel</i>	<i>Theatre</i>
<i>Charity</i>	<i>guage</i>	<i>Home</i>	<i>Oath</i>	<i>Toleration</i>
<i>Circumstances</i>	<i>Enthusiasm</i>	<i>Honesty</i>	<i>Occasion</i>	<i>War</i>
	<i>Error</i>	<i>Hope</i>	<i>Pleasure</i>	<i>Will, and</i>
		<i>Idea</i>	<i>Poor</i>	<i>Youth,</i>

as those in which they are either directly or indirectly discussed.

The systems of Education, as they are called, invented by Dr. BAYLY and Mr. JOSEPH LANCASTER, are noticed under our articles *EDUCATION* and *SCHOOL*. They are doubtless useful as means of conveying to, and impressing ideas upon the mind; but *moral education* embraces and requires a much larger range. We have not been so fortunate as to have been personal witnesses to the method of moral instruction, adopted by Mr. OWEN, but the accounts of this gentleman's establishment all agree in representing it as one of the best hitherto adopted in the formation of the human character.

The *education of the adult*; or, perhaps, we may be better understood if we say the *information and amusement* of men arrived at years of, at least, *body's* maturity, have not been properly, if at all, attended to in any European state: it having been mistakenly conceived that when the body ceased to grow, the mind did not need any further help, whereas, nothing is farther from the truth than this doctrine. It gives us, however, pleasure to observe the least departure from this unphilosophical notion. We learn from the preface to a valuable *Dictionary of*

Chemistry, lately published by Dr. URK, that within the last twelve years he has given, at the Andersonian Institution at Glasgow, twenty-one courses of lectures to upwards of six thousand students, composed of artisans, mechanics, and engineers, assembling every Saturday evening with exemplary decorum, to study the scientific principles of the useful arts; and, though the evening on which the workmen meet be that in which they receive their wages, yet no instance of intemperance has ever occurred to annoy the audience. These courses are especially designed for young artisans, who have only to pay about five shillings in the season, three months. The whole experimental means employed in carrying on this *Polytechnic school*, have been derived from the exertions and sacrifices of the professor, and the generous aid and contributions of his pupils. How might not such a method be expanded so as to embrace moral culture for the whole population?

Our knowledge of the proper means of education being, confessedly, still very imperfect, we cannot be expected to lay down any system; it is sufficient for our purpose, if we have pointed out what appears to us the right way. We may, however, observe, that many respectable individuals have contended that *emulation* ought not to be suffered to form a part of the means for the formation of the human character.* On this subject we are obliged, we trust, as respectfully, as sincerely, to differ. Our reasons will be found under our articles *AMBITION* and *EMULATION*.

That a knowledge of the proper education of the human mind is still in comparative infancy, every thing around us contributes to convince us; and although a good deal has been done towards that education, much more still remains to be accomplished. The present times have, we hope, effected much towards this good work; amongst other improvements, they have taught us to set a proper estimate upon that knowledge, commonly called *LEARNING*, the possessors of which have for many centuries in Europe, held the mind in more or less bondage; and who have also kept the keys to the avenues of certain honours and emoluments to themselves; but mankind begin to perceive that *UTILITY* and *IMPROVEMENT* are the growth of a different soil; and that the optics of the *mere classic* are very often quite unfitted for enduring the day-light of modern discovery, or the effulgence of an intellectual sun.

How! says the learned Professor, lift your pen against those pursuits which have been for ages held sacred? which have, in almost every nation of Europe, institutions set apart for the avowed purpose of inculcating them? What will become of Theology?—what of Law?—what of Medicine, without a *classical* education?—We hope we shall not be mistaken: for learning and its professors we have a sincere respect; and we hope also that we set a proper value upon the *vous* † which learn-

* L'émulation est la cause de la plupart des maux du genre humain; elle est la racine de l'ambition; car l'émulation produit le désir d'être le premier, et le désir d'être le premier, n'est autre chose que l'ambition, qui se partage, suivant les positions et les caractères, en ambitions positive et négative, d'où coulent presque tous les maux de la vie sociale.

ST. PIERRE.

† We beg the reader's pardon for this introduction of the *Grecian vous*; it simply implies *mind*.

ing is calculated to impart. Of the morality taught in the classics we cannot, however, speak greatly in commendation: the *helots* of ancient Greece, and the *slaves* of ancient Rome, are striking proofs of the deficiency in morals of these states, even when in their greatest splendour. And although the following sentiments may be called heroic, genuine morality cannot recognise them:

A generous friendship no cold medium knows,
Burns with one love, with one resentment glows;
One should our interests and our passions be,
My friend must hate the man who injures me."

POPE'S HOMER.

Nor does the *odi profanum vulgus et arceo* of HORACE, (implying an opinion which, we are sorry to observe, many persons called learned entertain of the greater part of mankind,) contribute to our attachment to Roman writers. Amongst the Grecian writings of antiquity, the *New Testament* must, however, be specifically exempted from this censure: in that, a sublime morality is, unquestionably, taught. We do not, therefore, object to an institution, the avowed design of which was, or is, to retain and convey to posterity a knowledge of the ancient languages of Greece and Rome, through the medium of Professors set apart for the purpose; and if there be those who are desirous of wading through the troubled flood of ancient learning to the opposite shore, let them do so; others, as well as ourselves, may be contented to bathe their feet a little, and land upon the first pleasant islet in their way. But let not individuals, having so waded, have an exclusive right to certain places and pre-eminencies in society, where, *abilities being equal*, competition ought to be equal, and open to all. Some of the preceding objections are quite irrelevant. Law, for example, which ought to be made so simple that he who runs may read, is too often a ready mischief, when enveloped in learned terms, or the mysteries of a foreign idiom. Of Theology we say nothing. But there is the Physician with his *Latin* prescription. We admit it; and he must be a bad observer of mankind who has not seen, that that mystery, amongst others, has, not a little, contributed to the opinion that medicine is altogether craft. But classical learning, it may be said, enables us to think with more precision, to write with more correctness, and to speak with more energy and effect. The first of these assertions we must be permitted to doubt; for the rest we say, study classical learning only so much as is necessary for such purposes; and instead of making it the main business of life, to the neglect of other and more important acquisitions, quit it as soon as the object is accomplished. And, above all, never forget that man is a *progressive being*; that

"What was once
Incontrovertible is overthrown;
And what now *seems* built on the base of Truth,
Perchance shall pass as stubble which the fire
In one full blast consumes;"

and that very little of the knowledge of two thousand years ago can be available for our present wants.

We are now, thanks to the progression of intellect, in another era, and it behoves us to adapt our education to the times,—to throw no obstacles in the way of the good work,—to shake off the trammels of the cloister, fit only for grown babies,—to remove the noxious umbrage which darkens the human mind, and let the broad day-light of reason visit it without intervening clouds. Nothing impedes so much the progress of things, nothing so much confines the human mind, as excessive admiration of the ancients.*

What may be our future improvement in the hitherto imperfect science of Education, it is not possible clearly to predict; but that much improvement will take place there can be no reasonable doubt: that man may ultimately arrive at that state so beautifully painted by the Poet, we may, perhaps, ardently hope, rather than philosophically expect.

“ When the glad slave shall lay down
His broken chain,—the tyrant lord his crown,—
The priest his book,—the conqueror his wreath;—
When from the lips of truth one mighty breath
Shall, like a whirlwind, scatter in its breeze
The whole dark pile of human mockeries;
Then shall the *Reign of Mind* commence on earth,
And starting fresh, as from a second birth,
Man, in the sunshine of the world's new spring,
Shall walk transparent, like some holy thing.”

MOORE'S *Lalla Rookh*.

DOMESTIC ECONOMY,

INCLUDING HORTICULTURE AND AGRICULTURE.

To this section belong some of the most important articles in our work. We have treated so copiously on *Domestic Economy* in our *Preliminary Address*, that a further notice here would be superfluous. The following may, however, be mentioned as some of the chief heads under which this subject is treated:

<i>Bank for savings</i>	<i>Broth</i>	<i>Coke</i>	<i>Hen</i>	<i>Scouring</i>
<i>Bed</i>	<i>Calf</i>	<i>Cow</i>	<i>Ink</i>	<i>Soup</i>
<i>Benefit Society</i>	<i>Cellar</i>	<i>Duck</i>	<i>Life</i>	<i>Steam</i>
<i>Boiling</i>	<i>Cider</i>	<i>Economy</i>	<i>Malt</i>	<i>Turkey</i>
<i>Bread</i>	<i>Chimney</i>	<i>Fire-place</i>	<i>Nurse</i>	<i>Vinegar</i>
<i>Breeding, good</i>	<i>Chimney sweeper</i>	<i>Goose</i>	<i>Pigeon</i>	<i>Wine, &c.</i>
<i>Brewing</i>	<i>Cool</i>	<i>Guinea Hen</i>		

To these may be added, besides our article HUSBANDRY,

<i>Apple</i>	<i>Butter</i>	<i>Draining</i>	<i>Grafting</i>	<i>Herring</i>
<i>Barley</i>	<i>Cabbage</i>	<i>Dry-rot</i>	<i>Granary</i>	<i>Horse</i>
<i>Bean</i>	<i>Carrot</i>	<i>Food</i>	<i>Green-house</i>	<i>Hot-bed</i>
<i>Breeding</i>	<i>Cheese</i>	<i>Flax</i>	<i>Hay</i>	<i>Hot-house</i>
<i>Budding</i>	<i>Cucumber</i>	<i>Gardening</i>	<i>Hemp</i>	<i>Ice-house</i>

* Rien n'arrête tant le progrès des choses, rien boine tant les esprits, que l'admiration excessive des anciens.—FONTENELLE.

<i>Infancy</i>	<i>Milk</i>	<i>Peat</i>	<i>Road</i>	<i>Smoke</i>
<i>Irrigation</i>	<i>Nursery</i>	<i>Plantation</i>	<i>Rot</i>	<i>Swine</i>
<i>Lettuce</i>	<i>Orchard</i>	<i>Plough</i>	<i>Rust</i>	<i>Threshing machine</i>
<i>Lime</i>	<i>Ox</i>	<i>Potatoe</i>	<i>Rye</i>	<i>Timber</i>
<i>Manure</i>	<i>Pea</i>	<i>Pruning</i>	<i>Salt</i>	<i>Turnip</i>
<i>Medicine chest</i>	<i>Pear</i>	<i>Rape</i>	<i>Shoeing</i>	<i>Wheat, &c.</i>
<i>Meadow</i>				

From the activity of the researches which are continually making by ingenious and enterprising individuals, not only our Domestic Economy, but Horticulture and Agriculture are receiving constant improvement. Agriculture, has, indeed, for a long time obtained a considerable share of the attention of scientific and practical observers, but Horticulture has latterly obtained much more of such attention than it has heretofore been accustomed to receive. Perhaps it may be useful to present our readers with the chief of the modern results of this art.

Sea-kale, which a few years ago was scarcely heard of, has of late become a market vegetable, and appears plentifully on the stalls of Covent Garden; and although our opinion of this vegetable is not high, yet it is, by many, much esteemed.

Rhubarb stalks are now so much in demand for the making of tarts, that they have become a leading article of trade with the green-grocers of the metropolis.

Cape Broccoli, is an early purple variety, which was introduced a few years ago; it is a fine kind, being of delicious flavour when dressed; but, on account of its being very apt to start into flower, its cultivation has, in many places, been neglected. When the crops are properly managed, however, this tendency can be over-ruled: two crops should be sown, the first in the middle of April, the next in the middle of May. The first crop may be transplanted in the open ground, but the last should be put into pots, which should be sunk into the open ground till the end of November, when they are to be taken up, and placed under a glass frame: fine broccoli will thus be obtained in the severest winters.

Knight's marrow-pea, is of luxuriant growth, generally rising to the height of eight or ten feet; in sheltered places, and with the aid of tall stakes, it is extremely productive.

Onions. The cultivation of the onion has been greatly improved by the practice of transplanting. They are sown, at the usual spring season, thick under the shade of a tree, and in poor soil; in the autumn the bulbs are small, scarcely exceeding large peas; they are then taken from the ground, and preserved till the succeeding spring, when they are planted at about six inches apart: in this way excellent onions are raised. Another method is to collect the small bulbs from the ordinary crops, which are usually thrown away, and transplant them in the same manner.

Potatoes. Various new kinds have been raised in different parts of the country; but a hardy potatoe, which may be less liable to be injured by frost, is still a desideratum. A potatoe, called in Scotland the *Early Royal Dwarf*, has been highly spoken of: it is distinguished by

its broad shining leaves, and by the first tubers forming a cluster of three or four immediately at the bottom of the stem; so that it is easy to remove from the plant the earliest and largest potatoes without disturbing the roots, by which means the plant produces a sufficient crop of secondary tubers for seed-stock.

Small supplies of young potatoes are now commonly produced during winter, in boxes placed in the mushroom-house, in the shade at the back of the hot-house, or in a common cellar if beyond the reach of frost. For this purpose old potatoes are placed in layers in the boxes, alternating with a mixture of tree-leaves, sand, and light mould, until they are full. Vegetation soon proceeds, and before mid-winter the young potatoes are formed: they are, however, but indifferent eating.

Of the *Turnip-rooted cabbage* there are two varieties; one swelling above the ground, the other in it. Both are occasionally used for the table; and, while in a young state, are equal in flavour to the Swedish turnip.

Succory, or *Cichorium intybus*, has been recommended as a winter salad; it is much esteemed in France, and when blanched is known under the name of *Barbe du Capuchin*. It may be sown in June or July, in drills, and the plants are thinned out to four inches apart. At the end of September, or beginning of October, they are to be planted in boxes filled with rich mould, pretty close together. The boxes are set in a sheltered situation, and when frost comes on they are protected by haulm as a covering. As the salad is wanted the boxes are successively removed into some place having a moderately increased temperature, equal to 55°, but not exceeding 60° of Fahrenheit. The less light they are subjected to, the more perfectly are they blanched.

The roots of succory, when dried, have been latterly used as a substitute for coffee.

The *American Cress*, or *Erysimum præcox*, has lately been very generally cultivated as a salad. It may be obtained at almost any season of the year, as the plants stand the winter without injury.

Two uncommon varieties of the melon have been introduced: the *Salonica melon* has a pure and white pulp, and is very saccharine; the fruit should remain on the plant till it is completely matured. The *Valentia melon* is remarkable for the property of keeping many weeks, so that it is sometimes imported into London from Spain, of which country it is a native. It is raised in this country in the manner of other melons. The fruit gathered when nearly ripe, and suspended in a dry airy room, will keep till January or February. Hence, it is often called winter melon.

A small green gourd has, for some years past, been cultivated in the neighbourhood of London, under the name of *Saccada*, or *Vegetable marrow*. It may be raised in the spring on a common melon or cucumber bed; and in June transplanted to the open border, in a good aspect, and trained to a small temporary trellis. When the fruit is the size of a hen's egg it is accounted fit for use. It is dressed in salt and water, and squeezed and served up on slices of toast.

Preserving cauliflowers during the winter. Cauliflowers planted out

in July will be fit for use in October. Towards the end of this month the most compact and best shaped are selected, and taken up carefully with the spade, keeping a ball of earth attached to the roots; they are arranged in peach-houses, vineries, or other similar situations, in borders, without touching, some of the large outside leaves being taken off: or they may be kept in hot-bed frames.

During the last thirty years the desire for FRUIT has greatly increased among the inhabitants of this country, and the attention paid to its production has advanced in proportion.

Some kinds of fruit-trees, particularly the mulberry and walnut, are so slow in their progress to a bearing state, that the planter of the trees seldom sees the fruit. Mr. Knight has ascertained that if these fruits be grafted, the scions being taken from prolific branches of bearing trees, the young trees become productive in a very few years.

We may mention also, that it has been lately ascertained that the apricot, when 40 or 50 years old, will produce fine ripe fruit as a standard tree in the southern parts of this kingdom.

Of all the recent improvements in horticulture, the most important is the use of steam for communicating artificial heat, in place of depending, as formerly, on the passage of smoke and heated air through flues, aided in the Stoves by tanner's bark. The principal advantage arising from the use of steam consists in its producing an equable high temperature, which can be maintained for a length of time with great ease and certainty. Steam is not only more effectual, but has been found also more economical, as a means of heating hot-houses, and, therefore, this new method deserves every encouragement.

During the last twenty years, great attention has been paid to the production of *seedling varieties* of the more hardy fruits suited to our climate. For exciting the attention of the public to this important subject, we are particularly indebted to Mr. Knight, who appears to have proved that when we graft or bud to obtain any particular fruit, the individual only has been extended; but in order to obtain a complete renewal, the only true reproduction is by seed. Hence the use and advantage of seedling varieties of fruit, as well as other plants.

The Establishment of Horticultural Societies has also contributed to promote these objects, amongst which the *London Horticultural Society*, and the *Caledonian Horticultural Society*, may be mentioned. The *Transactions* of both are become of great interest and importance.

The following are the names of some of the new seedling APPLES, which have obtained celebrity: *Down'ton Pippin*, *Wormsley Pippin*, *Newton Pippin*, *Yellow Ingestrie Pippin*, *Scotch Nonpareil*, *Russet Nonpareil*, *Martin Nonpareil*, *Bradick Nonpareil*, *Breedon Pippin*, and *Lamb Abbey Pearmain*. From North America the following apples have been obtained, and deserve mention: *Newton Pippin*, *Spitsenberg Apple*, *American Nonpareil*, *Canadian Renet*; and from the Continent one called *Borsdorfer*, which is much esteemed.

Seedling Pears require ten or twelve years before they show blossom buds; the *Wormsley Bergamot*, and *Williams' Bon Chretien* may, however, be recommended. And the *Sickle Pear*, an excellent variety, ought also to be mentioned.

Of *Seedling Peaches* the *Acton Scott Peach*, and the *Spring Grove Peach*, both the productions of Mr. Knight, deserve particular notice. To America we owe *Braddick's American Peach*.

Of the *Nectarine* the only new variety is the *Woodhall Nectarine*.

The most important acquisition of the *Plum* tribe is, *Wilmot's New early Orleans Plum*; it resembles the *Orleans*, but is softer, more juicy, and of excellent flavour. *Coe's Golden Drop* is also a new variety. The *Hails Plum* is a seedling producing fruit somewhat like the green-gage.

Of *Seedling Cherries* the *Elton*, the *Black Eagle*, the *Waterloo*, and the *Early black*, may be mentioned.

Of *Grapes*, the following new varieties deserve mention: *Variegated Chasselas*, *Pitmaston white cluster*, and *Esperione*.

Of *Gooseberries*, are many new varieties; the *Old Ironmonger*, the *Red Champagne*, *Warrington*, the *Captain* and *Wilmots' early red*, deserve particular mention.

Among *Currants* the *Large Dutch white*, the *Champagne*, and the *Pollock white*, are of a superior kind.

The *Roseberry Strawberry*, the *Downton Strawberry*, and the *Mulberry Strawberry*, are new varieties, and well spoken of.

As a new addition to our hardy cultivated fruits, the *American Cranberry*, *taccinium macrocarpon*, deserves particular notice. It grows freely and produces fruit readily in any damp situation, though not absolutely marshy; but wherever there is a pond, it may be planted on its margin in peat or bog-earth, mixed with sand, having stones at the bottom.

The *Granadilla vine*, or *passiflora quadrangularis*, and the *Purple-fruited Passion flower*, or *passiflora edulis*, are now found in some of our stoves, and treated as fruit-bearing plants.

The *Loquat*, *mespilus japonica*, is a new fruit, which appears to deserve more extensive cultivation. A description of this plant will be found under our article *MEDLAR*.

The *Shrubbery*, the *Flower garden*, and the *culture of flowers*, may also with propriety be arranged under this head, although the subjects are confessedly, as well as many of the preceding, *Botanical*. We esteem the culture of flowers one of the most agreeable and delightful employments which can engage the leisure of a human being. The subjects in our work relating to flowers and shrubs, are too numerous to be specifically mentioned; but we may observe here, that we have generally preferred treating of them, as indeed every other subject of Natural History, under their common and more usual names, rather than under their more scientific appellations. This may, possibly, offend the pride of the pedant, but it will be more agreeable, we presume, to the generality of our readers.

We have given various directions throughout our work for the cultivation of the choicest flowers, and also the summary management of the hot-house, green-house, &c., but to the far greater number of our readers these will, probably, be of little consequence. The *open flower garden* will, and should, obtain the most attention. Whatever the curious in flowers may be pleased to consider as the standard of perfection relative to their colours and forms, those who make the flower-garden a recreation, not a business, will often be pleased with a flower, although the

root of it should not cost a guinea ; nor, when expanded, will they quarrel with it, although it should not suit the geometrical admeasurement of the connoisseur.

Pan-flowers are at all times attended with trouble, and unless a gardener be kept, or the master or mistress of a family have much leisure, and, we may add, a taste for such employments, the pan-flower nursery will often fare badly. But the variety of flowers which thrive in the open garden in our climate is very great. One of the most agreeable of these is the *single wall-flower*, and although many of its varieties may not please the professed florist, these plants, scattered irregularly in the shrubbery, and in the borders, afford, in the spring, a most delightful fragrance, which is often heightened by the fluttering of the bee about these flowers, of which this insect is remarkably fond.

To enumerate all the flowers which are easily raised would occupy too much space in our pages ; but those who desire at a small expense an agreeable variety, will find them for almost every season of the year in the following list : they are mentioned in the order, or nearly so, of their blossoming :—*Snow drop, Crocus, Violet, Hepatica, Anemone, Daffodil, Crown Imperial, Jonquil, Hyacinth, Daisy, Ranunculus, Tulip, Auricula, Polyanthus, Campanulus, Stocks, Lychnis, Pink, Carnation, Lychnidea, Sweet-peas, Sweet-William, Everlasting peas, Poppies, Aconite, Convolvulus, Larkspurs, Candy tuft, Thrift, Musk-flower, Holly-hock, Snap-dragon, Sun-flower, Mignonette, Tree Mignonette, Lupine, Lilies, Lily of the valley, Marygold, African Marygold, China aster, Chrysanthemums, Persicarias, Love-lies-bleeding, Dahlias, Michaelmas daisy, Winter cherries, &c. &c.*

The flowering shrubs of ready growth are the *Mezereon*, the *Almond*, the *Sweet briar*, the *Jasmine*, numerous varieties of the *Rose*, *Hydrangea*, *Lilac*, *Guelder rose*, *Syringa*, *Sumach*, (chiefly for its beautiful pinnate leaves,) *Woodbines*, *Southernwood*, for its fragrant leaves, *Laurustinus*, &c. &c. *Myrtle* may also be mentioned ; but, except in very sheltered situations, it will not bear the cold of our winters.

A few of the more recently introduced shrubs and flowers may also be here enumerated. The *Blush China rose*, or *rosa Indica* ; the *Crimson China rose*, or *rosa semperflorens* ; the *Macartney rose*, or *rosa bracteata* ; the *Bramble flower rose*, or *rosa multiflora* ; *L. dy Banks's rose*, or *rosa banksiæ* ; the *White moss rose* ; the *Ayreshire rose* ; and the *Scots rose*, *rosa spinosissima*. We may also mention the *Austrian rose* as deserving especial notice ; although not of very recent introduction. See our article *ROSE*.

Some very ornamental Japan shrubs are particularly deserving of notice. The *Corchorus japonicus*, or *Kerr's japonica* ; the *Japan apple*, or *Pyrus japonica* ; the *Gold plant of Japan*, or *Aucuba Japonica*.

The *Siberian lilac* is also a pretty shrub ; and the *yellow-flowered currant*, or *Ribes aureum*, makes a fine appearance with its blossoms, when in a sheltered place, or trained against a wall.

The *Irish Ivy*, is a broad-leaved ivy, very ornamental ; the *Irish Yew* is also a fine object for a shrubbery ; the *Irish Furze* is a curious ornamental and useful plant. These three are natives of Ireland.

The *Tree-piony*, or *montan*, is a most beautiful ornament when in flower ; it requires temporary shelter during the winter. A great variety of *Pionies* have been of late much cultivated : the *corallina* ; the *paradoxa*

fimbriata, or double fringed; the *peregrina compacta*; the *albiflora*; the *daurica*; the *tenuifolia*; the *albiflora tatarica*; and the *officinalis*. See Piony in the Appendix.

The cultivation of the *dahlia* is fashionable; it is a showy and ornamental flower: there are two species of this genus, the *superflua* and the *frustranea*; of the former, there are purple, scarlet, and rose-coloured varieties; of the latter, saffron-coloured and white. An account of this genus will be found in our Appendix, article DAHLIA.

The *Cardinal flower*, *lobelia cardinalis*, has been long admired; but it has been surpassed by the *fulgens* and the *splendens*, two species of lobelias lately introduced, and fortunately more hardy, or at least, more easily kept than the former; in mild winters they stand perfectly well in open borders.

The *Tiger-spotted lily*, or *lilium tigrinum*, is a valuable acquisition; they multiply by the root, or by means of the bulbs produced in the axillæ of the leaves.

The *Mexican tiger-flower*, or *tigridia pavonia*, succeeds pretty well in the front of a hot-house. The roots require to be taken up at the approach of winter, and to be kept carefully from the access of frost.

Of the *Heaths* about 240 species of various beauty are now cultivated. They are chiefly natives of the Cape of Good Hope, and in some places of this country, a separate green-house has been set apart for them under the name of the *Heathery*. They grow best in a mixture of bog earth and sand, and are generally propagated by cuttings.

The number of showy *Geraniums* from seedling varieties, has greatly increased. Some of the finest are varieties of the *pelargonium inquinans*, a species of crane-bill with flowers intensely crimson, and semi-double; others with large blossoms finely marked on a light ground, have sprung from the *pelargonium cucullatum*. See our Appendix, article CRANE-BILL.

The *Tree Mignonette*, although a hardy flower, and easily raised, must not be passed over. When kept in pots it will remain in flower throughout the winter. See MIGNONETTE.

The conservatory is now filled with the beautiful *acacias* of New Holland; these are not less remarkable for their singular foliage, than for the profusion in which they display their rich yellow flowers in the spring season.

The *Japan rose*, or *camellia Japonica*, has afforded some most beautiful varieties both with double red and with double white flowers.

The *Hydrangea* is a beautiful flower, and succeeds in the open borders in sheltered districts, but it is often injured during the winter. In general the conservatory is the best place for it.

Tender aquatics of the genera *Nymphæa*, or *water-lily*, *Nuphar*, *Menyanthes*, and *Nelumbium* are now cultivated with great success in frames resembling those used for raising melons. The plants are placed in cisterns made of wood and lined with lead, about four feet in length and two and a half in breadth: these cisterns are plunged in tanner's bark, or stable dung.

Great attention has for some years past been paid to the important subject of rendering plants of warm countries sufficiently hardy to enable them to sustain our variable climate. The most effectual way is to endeavour to bring such plants to ripen their seeds in the open air in this coun-

try with as little assistance from glass as possible; and then to sow these seeds, from which a more hardy progeny may be expected. This mode, continued for several generations, may, most probably, completely naturalize the plant.

NATURAL HISTORY,

(CONTAINING BOTANY, MINERALOGY, AND ZOOLOGY.

In this department of our work, the articles are so numerous as to prevent any specification of them. What is said under BOTANY, MINERALOGY, ZOOLOGY, and MIGRATION OF BIRDS, should, of course, be carefully attended to. The article zoology, has been made as explicit as possible, by the addition of the common names of the genera, or some of the chief species of the genera, so as to direct the reader most easily to the article which he may desire to consult. As some of the genera, both in Botany as well as in Zoology, have no English names, we have sometimes thought it more advisable to describe the genus under the name of a well-known species, than to place it under a name with which the mere English reader might not be acquainted. Thus the genus *Scolopax* is described under the article *Curlew*, one of its well-known species; the same method has been observed with plants, particularly where one of the species should happen to be of importance. And sometimes, where the species is of great moment we have merely named it under its genus, and treated of the species separately, as in Potatoe, Turnip, Rape, &c.

Throughout our work, unless mentioned to the contrary, the Linnean arrangements are always to be understood as those to which we refer. It may be, perhaps, also necessary to mention, that instead of repeating the genus by name, or its initial letter, before every species, we merely place the article *the* with the specific name. Thus, under the article *Deer*, the *Alces*, or Elk, must be understood with its generic name *Cervus alces*. The *Dama*, or Fallow deer, means *Cervus dama*. In this manner, by merely supplying the generic terms in every department of Natural history throughout our work, the names by which the species are known to the scientific will be accurately found. Our reason for omitting the generic term, was, simply, to save room; and by this explanation, we trust, the omission may be, by the most careless reader, readily supplied.

When our article on *Botany* was written, we did not perceive the utility of giving the names of the Linnean classes and orders in our work; having, however, seen reason to alter our opinion, we introduce them here, and have mentioned under each order, the name of one, or more of the genera, belonging to it, that the reader may more readily understand this arrangement. To introduce all the generic names, is not within the limits of our design.

Class I. or MONANDRIA, consists of such plants as bear hermaphrodite flowers, furnished with but one stamen. The orders of this class are two: *Monogynia*, comprehending such plants as have but one style; it consists of twenty-four genera, of which the genus *anonym*, Ginger, being one of its species, may be taken as an example.

Digynia comprehends such plants as

have two styles; it consists of five genera; of these, the genus *Callitriche*, or Star-grass, is an example.

Class II. or DIANDRIA, consists of such plants as bear hermaphrodite flowers, furnished with two stamens. The orders are three: *Monogynia*, comprehends such plants as have but one style, and contains forty-one genera, of which *Syringa*, or Lilac, is an example.

Digynia comprehends such plants as have two styles; it contains *two* genera, of which *Anthoxanthum*, or Vernal-grass, is an example.

Trigynia comprehends such plants as have three styles; one genus only, *Piper*, or Pepper.

Class III., or TRIANDRIA, consists of plants bearing hermaphrodite flowers, furnished with three stamens. The orders are *three*: *Monogynia*, comprehending such plants as are described under the same orders in the preceding classes. This order contains *forty-six* genera, of which *Valeriana*, or Valerian, is an example.

Digynia, comprehending such plants as are described under the same orders, in the preceding classes: *forty* genera, of which *Hordeum*, or Barley, and *Triticum*, or Wheat, are examples. All the plants of this order are grasses, and furnish grain for man, seed for birds, or food for cattle.

Trigynia comprehends such plants as have three styles; it contains eleven genera, of which *Holosteum*, or Chickweed, is an example.

Class IV., or TETRANDRIA, consists of such plants as bear hermaphrodite flowers, furnished with four stamens. The flowers of this class are distinguished from the fourteenth by having stamens of an equal length, while the fourteenth, having also four stamens, have two long and two short. The orders of this class are four: *Monogynia*, as before; *one hundred and two* genera, of which *Scabiosa*, or Scabious, is an example.

Digynia, as before; *seven* genera, of which *Cuscuta*, or Dodder, is an example.

Trigynia comprehends as before; *one* genus, *Boscia*, a Cape plant.

Tetragynia comprehends plants having four styles; this order comprehends *eight* genera, of which *Ilex*, or Holly, is an example.

Class V., or PENTANDRIA, consists of such plants as bear hermaphrodite flowers, furnished with five stamens. The orders are *seven*: *Monogynia*, as be-

fore; *two hundred and fifteen* genera, of which *Borago*, or Borage, is an example.

Digynia, as before; *eighty* genera, of which *Conium*, or Hemlock, is an example.

Trigynia, as before; *twenty-one* genera, of which *Viburnum*, or Guelder rose, is an example.

Tetragynia, as before; *two* genera, of which *Parnassia*, or Grass of Parnassus, is an example.

Pentagynia, comprehends such plants as have five styles; *ten* genera, of which *Statice*, or Sea lavender, is an example.

Decagynia, comprehends such plants as have ten styles, of which the only genus is *Sheffleria*.

Polygynia, comprehends such plants as have many styles; *two* genera, of which *Myosurus*, or Mouse-tail, is an example.

Class VI., or HEXANDRIA, consists of plants bearing hermaphrodite flowers, furnished with six stamens. The flowers of this class are distinguished from the fifteenth by having the stamens of equal length, while in the fifteenth, which have also six stamens, four are long and two short. *Five* orders: *Monogynia*, as before; *ninety-eight* genera, of which *Bromelia*, or Pine apple, is an example.

Digynia, as before; *four* genera, of which *Oryza*, or Rice, is an example.

Trigynia, as before; *eleven* genera, of which *Rumex*, or Dock, is an example.

Hexagynia comprehends such plants as have six styles; *two* genera, of which *Damasonium*, an Indian plant, is an example.

Polygynia, as before; *one* genus, *Alisma*, or Water plantain.

Class VII., or HEPTANDRIA, consists of plants bearing hermaphrodite flowers, and furnished with seven stamens. *Four* orders: *Monogynia*, as before; *eleven* genera, of which *Trientalis*, or Winter green, is an example.

Digynia, as before, *one* genus, *Limeum*, a Cape plant; *three* species.

Tetragynia, as before; *two* genera, of which *Saururus*, or Lizard's tail, is an example.

Heptagynia contains such plants as have seven styles ; one genus, and one species, *Septas*, a Cape plant.

Class VIII., or OCTANDRIA, consists of such plants as bear hermaphrodite flowers, with eight stamens. Four orders : *Monogynia*, as before : *fifty-five* genera, of which *Vaccinium*, or Whortleberry, is an example.

Digynia, as before ; *five* genera, of which *Moehringia*, or Mossy Chickweed, an Alpine annual, is an example.

Trigynia, as before ; *seven* genera, of which *Polygonum* is an example.

Tetragynia, as before ; *six* genera, of which *Paris* is an example.

Class IX., or ENNEANDRIA, consists of plants bearing hermaphrodite flowers, and having nine stamens. Three orders : *Monogynia* ; *five* genera, of which *Laurus*, or Bay, is an example.

Tetragynia ; one genus, *Rheum*, or Rhubarb.

Hexagynia, as before ; one genus, *Butomus*, or Flowering rush.

Class X., or DECANDRIA, comprehends plants bearing hermaphrodite flowers, and having ten stamens. Five orders : *Monogynia* ; *eighty-two* genera, of which *Arbutus*, or Strawberry-tree, is an example.

Digynia ; *twelve* genera, of which, *Hydrangea* and *Dianthus*, or Pink, are examples.

Trigynia ; *twelve* genera, of which *Stellaria*, or Stitchwort, is an example.

Pentagynia ; *fourteen* genera, of which *Sedum*, or Stone crop, is an example.

Decagynia, as before ; *two* genera, of which *Phytolacca*, or American nightshade, is an example.

Class XI., or DODECANDRIA, consists of such plants as bear hermaphrodite flowers, furnished with any number of stamens, from twelve to nineteen, both inclusive. Six orders : *Monogynia* ; *thirty-one* genera, of which *Asarum*, or Asarabacca, is an example.

Digynia ; *two* genera, of which *Agri-monia*, or Agrimony, is an example.

Trigynia ; *five* genera, of which *Re-seda*, or Weld, is an example.

Tetragynia ; *two* genera, of which *Aponogetum*, a Cape or Indian plant, is an example.

Pentagynia ; *two* genera, of which *Glinus*, or Blue daisy, is an example.

Dodecagynia, comprehends such plants as have twelve styles ; one genus only, the *Sempervivum*, or House leek.

Class XII., or ICOSANDRIA, consists of such plants as bear hermaphrodite flowers, having a calyx, monophyllous, and concave ; the corol fastened by its claws to the inner side of the calyx ; the stamens twenty or more ; as the number of stamens in this class is not limited, attention must be paid to this description, in order to distinguish the flowers from those of the next class. This class furnishes the fruits in most esteem. The orders are five : *Monogynia* ; *twenty-one* genera, amongst which, the *Amygdalus*, or Almond, and the *Prunus*, or Plum, may be quoted as examples.

Digynia ; one genus only, *Waldsteinia*.

Trigynia ; one genus only, *Sesavium*.

Pentagynia ; *six* genera, of which *Mespilus*, or Medlar, and *Pyrus*, or Pear, are examples.

Polygynia ; *nine* genera, of which *Rosa*, or Rose, *Rubus*, or Bramble, and *Fragaria*, or Strawberry, may be quoted as examples.

Class XIII., or POLYANDRIA, consists of such plants as bear hermaphrodite flowers, furnished with many stamens. The distinction between this class and the last may be known by referring to the description of that class. Six orders : *Monogynia* ; *fifty-two* genera, of which *Papaver*, or the Poppy, and *Nymphaea*, or Water lily, are examples.

Digynia ; *six* genera, of which *Paeonia*, or Piony, is an example.

Trigynia ; *three* genera, of which *Delphinium*, or Lark's spur, and *Aconitum*, or Wolf's bane, are examples.

Tetragynia ; *five* genera, of which *Wintera* is an example. See WINTER'S BARK.

Pentagynia ; *three* genera, of which *Nigella*, or Fennel flower, is a specimen.

Polygynia ; *twenty-one* genera, of which

Anemone, *Clematis*, *Ranunculus*, or Crow-foot, and *Helleborus*, or Hellebore, are specimens.

Class XIV., or DIDYNAMIA, consists of such plants as bear hermaphrodite flowers, furnished with four stamens, two of which are longer than the rest. The flowers of this class are, for the most part, almost upright, but inclining a little at an acute angle from the stem, that the corol may more easily cover the anthers, and that the pollen may fall on the stigma, and not be soaked with rain. Two orders: *Gymnospermia*, comprehends such plants as have four naked seeds, excepting *Phryma*, which is monospermous; *forty-one* genera, of which *Lavandula*, or Lavender, and *Mentha*, or Mint, are specimens.

Angiospermia, comprehending plants having the seed in a pericarp, and the stigma commonly obtuse. *Eighty-six* genera, of which *Digitalis*, or Fox glove, *Euphrasia*, or Eye bright, and *Scrophularia*, or Fig wort, are specimens.

Class XV., or TETRADYNAMIA, consists of such plants as bear hermaphrodite flowers, furnished with six stamens, of which two are shorter than the rest. The flowers of this class are of a particular structure; the corol is *Cruciform*, having four equal petals; the seeds are roundish. Two orders: *Siliculosa*, comprehending those plants whose pericarp is a *Silicle*, a little pod or pouch; *twenty* genera, of which *Cochlearia*, or Scurvy grass, is a specimen.

Siliquosa comprehends those plants whose pericarp is a silique, or proper husk, cod, or shell. *Eighteen* genera, of which *Brassica*, or Cabbage, *Sinapis*, or Mustard, and *Raphanus*, or Radish, are specimens.

Class XVI., or MONADELPHIA, consists of such plants as bear hermaphrodite flowers, furnished with one set of united stamens. The flowers of this order are pentapetalous, the petals heart-shaped; the pericarp a capsule divided into as many loculaments as there are pistils; its figure various in the different genera; seeds kidney-shaped. *Eight* orders: *Triandria*, comprehending plants having three stamens; *five* genera, of

which *Tamarindus*, or Tamarind, is a specimen.

Pentandria contains such plants as have five stamens; *nine* genera, of which *Hermannia*, a Cape genus, is an example.

Heptandria comprehends plants having seven stamens; *one* genus only, *Pelargonium*, or Crane-bill: a very extensive tribe, and similar to the geranium.

Octandria comprehends plants having eight stamens; *two* genera, one of which *Aitonia*, a Cape shrub, with flesh-coloured flowers, is an example.

Decandria comprehends plants having ten stamens; *five* genera, of which *Geranium* is a well known example. The species of this genus singularly vary in the number of stamens and other circumstances.

Endecandria comprehends plants having eleven stamens; *one* genus only, *Brounea*, a South American tribe.

Dodecandria comprehends plants having twelve stamens; *nine* genera, of which *Helicteris*, or Screw-tree, is a specimen.

Polyandria comprehends plants having many stamens; *twenty-eight* genera, of which *Althaea*, or Marsh mallow, *Alcea*, or Holly hock, and *Malva* or Mallow, are well known specimens.

Class XVII., or DIADELPHIA, consists of such plants as bear hermaphrodite flowers, furnished with two sets of united stamens. The ordinary situation of the flowers is obliquely pendulous. *Four* orders: *Pentandria*, as before; *one* genus, *Monniera*, a Guiana plant.

Hexandria comprehends plants having six stamens; *two* genera, of which *Fumaria*, or Fumitory, is an example.

Octandria as before; *three* genera, of which *Polygala*, or Milk wort, is a specimen.

Decandria as before; *seventy-two* genera, of which *Lupinus*, or Lupine, *Dolichos*, or Cow itch, *Glycyrrhiza*, or Liquorice, and *Pisum*, or Pea, are examples.

Class XVIII., or POLYDELPHIA, consists of plants bearing hermaphrodite

flowers, and furnished with many sets of united stamens. The flowers have no particular further character than is expressed in the title. *Four orders: Pentandria*, one genus only, *Theobroma*, Cacao, or Chocolate-tree.

Dodecandria; two genera, of which *Bubroma*, or Bastard cedar, is an example.

Icosandria comprehends plants having twenty stamens in each set; one genus only, *Citrus*, or Citron.

Polyandria having many stamens in each set; seven genera, of which *Hyperricum*, or St. John's wort, is an example.

† *Class XIX. or SYNGENESIA*, consists of such plants as bear compound flowers. In this class there is no true pericarp, although in some there is a coriaceous crust: seed single, oblong. *Five orders: Polygamia æqualis* comprehending such plants as have compound flowers, of which the florets are all hermaphrodite. *Seventy-three* genera, of which *Latuca*, or Lettuce, *Carduus*, or Thistle, and *Leontodon*, or Dandelion, are specimens.

Polygamia superflua, comprehends such plants as have the florets of the disk hermaphrodite, and those of the radius female. *Sixty-one* genera, of which *Artemisia*, or Mugwort, *Bellis*, or Daisy, and *Tanacetum*, or Tansy, are examples.

Polygamia frustranea comprehends such plants as have the florets of the disk hermaphrodite, and those of the radius neuter. *Sixteen* genera, all radiate, of which *Helianthus*, or Sun-flower, is a specimen.

Polygamia necessaria, comprehends such plants as have the florets of the disk male, and those of the radius female. *Twenty-two* genera, most of which are radiate, of which *Calendula*, or Marigold, is an example.

Polygamia segregata comprehends such plants as have many partial cups contained in the common calyx, which separate and surround the *floscules*. *Seventeen* genera, of which *Speranthus*, or Globe-flower, and *Echinops*, or Globe thistle, are examples.

Class XX. or GYNANDRIA, consists

of such plants as have the stamens growing either upon the style itself, or upon a receptacle that stretches out into the form of a style, and supports both the stamens and the pistil. *Four orders: Diandria*, plants having two stamens; *fourteen* genera, of which *Orchis* is an example.

Triandria having three stamens: one genus, *Salacia*.

Hexandria; one genus only, *Aristolochia*, or Birth wort.

Dodecandria; one genus, *Cytinus*, or Rape of Cistus.

Class XXI. or MONÆCIA, consists of such plants as have no hermaphrodite flowers, but bear both male and female flowers on the same plant. *Eight orders:*

Monandria comprehends such plants as have their male flowers furnished with one stamen; *ten* genera, of which *Artocarpus*, or Bread-fruit tree, is an example.

Diandria comprehends plants having their male flowers furnished with two stamens; *two* genera, of which *Lemna*, or Duck's meat, is a specimen.

Triandria contains the plants which have their male flowers furnished with three stamens; *nineteen* genera, of which *Zea*, or Indian corn, is a specimen.

Tetrandria contains the plants whose male flowers are furnished with four stamens. *Twelve* genera, of which *Morus*, or the Mulberry, is an example.

Pentandria contains the plants whose male flowers are furnished with five stamens. *Eight* genera, of which *Amaranthus*, or Amaranth, is an example.

Hexandria, the plants whose male flowers are furnished with six stamens. *Seven* genera, of which *Cocos*, or the Cocoa-tree, is a specimen.

Polyandria, the plants whose male flowers are furnished with many stamens. *Twenty-three* genera, of which *Quercus*, or oak, *Juglans*, or Walnut, and *Fagus*, or Beech, are well-known specimens.

Monadelphica, the plants which have their male flowers furnished with one set of united stamens. *Twenty-one* genera, of which *Pinus*, or Pine, is an example.

Class XXII. or DIÆCIA, consists of

plants having no hermaphrodite flowers, but bear male and female flowers on distinct plants. *Fourteen* orders: *Monandria* contains those plants which have their male flowers furnished with one stamen; *five* genera, of which *Pandanus*, or Screw-pine, is a specimen.

Diandria, plants having their male flowers furnished with two stamens; *three* genera, of which *Salix*, or the Willow, is a specimen.

Triandria, plants having their male flowers furnished with three stamens; *eleven* genera, of which *Empetrum*, or Berry-bearing heath, is an example.

Tetrandria, plants having their male flowers furnished with four stamens; *nine* genera, of which *Viscum*, or Mistletoe, and *Myrica*, or Candleberry myrtle, are examples.

Pentandria, plants having their male flowers furnished with five stamens; *sixteen* genera, of which *Cannabis*, or Hemp, and *Humulus*, or Hop, are specimens.

Hexandria, plants having their male flowers furnished with six stamens; *eight* genera, of which *Tamus*, or Black Bryony, is an example.

Octandria, plants having their male flowers furnished with eight stamens. *Three* genera, of which *Populus*, or Poplar, is a familiar example.

Enneandria, plants having their male flowers furnished with nine stamens. *Two* genera, of which *Mercurialis*, or Mercury, is an example.

Decandria, plants having their male flowers furnished with ten stamens. *Three* genera, of which *Carica*, or Papaw-tree, is an example.

Dodecandria, plants having their male flowers furnished with twelve stamens. *Four* genera, of which *Menispermum*, or Moon-seed, is a specimen.

Icosandria, plants having their male flowers furnished with many stamens inserted into the calyx. *Three* genera, of which *Xylosma* is an example.

Polyandria, plants having their male flowers furnished with many stamens. *Four* genera, of which *Cliffortia*, an evergreen tribe of the Cape, is an example.

Monadelphica, plants having their male

flowers furnished with one set of united stamens. *Nine* genera, of which *Juniperus*, or Juniper, and *Taxus*, or Yew, are specimens.

Gynandria, plants which have their male flowers furnished with stamens, that grow out of a kind of style, or imperfect pistil, the perfect one being in the female flower. *One* genus, *Clusia*.

Class XXIII, or **POLYGAMIA**, consists of such plants as bear hermaphrodite flowers, and also either male or female flowers, or both. *Three* orders; *Monœcia* comprehends such plants as have the polygamy on the same plant; *twenty-eight* genera, of which *Musa*, or Plantain tree, *Acer*, or Maple, and *Mimosa*, or Sensitive plant, are specimens.

Diœcia, plants having the polygamy on two distinct plants. *Fourteen* genera, of which *Fraxinus*, or Ash, is one.

Triœcia, comprehends such plants as have the polygamy on three distinct plants. *Three* genera, of which *Ficus*, or Fig, is one.

Class XXIV, or **CRYPTOGAMIA**, consists of such plants as conceal their fructifications, having their flowers either within the fruit, or so small as not to be perceptible to the naked eye. *Five* orders: *Filices*, or Ferns, comprehending such plants as are dorsiferous, or which bear fruit on the back of the leaf. *Thirty-eight* genera, of which *Polypodium*, or Polypody, and *Adiantum* or Maiden-hair, are specimens.

The *Musci*, or Mosses, have the female flowers distinct and without any pistil; they consist only of a naked coracle, with scarcely any cotyledon, or tunic. *Twenty-three* genera, of which *Polytrichum*, or Golden Maiden-hair, and *Hypnum*, or Feather moss, are specimens.

Hepaticæ. The characters of the plants of this order is frondose herb, and capsules, without lid or veil, *seven* genera, of which *Jungermannia*, is a specimen.

Algæ, or Flags, have their root stem and leaf all in one. *Twelve* genera, of which *Fucus*, or Sea-wrack, and *Ulya*, are examples.

' *Fungi*, or Mushrooms. This order is perfectly known. *Fifty-two* genera, of which contains those plants which have gills which *Lycoperdon*, or puff-ball, is an underneath ; the fructification imperfect example.

Besides this artificial sexual arrangement, naturalists have attempted to discover what has been called the *natural method* of classification. Indeed, Linnæus divided vegetables into what he called fifty-eight natural divisions ; these divisions have been since much simplified, and may be reduced to the following eight : *Fungi*, or Funguses ; *Algæ*, or Sea-weed ; *Musci*, or Mosses ; *Filices*, or Ferns ; *Gramina*, or Grasses ; *Lilia*, or Lilies with bulbous, or tuberous roots ; *Palmae*, or Palms ; *Plantæ*, or Plants, including every vegetable that cannot be arranged under the preceding heads. They are *herbæ*, herbs ; *suffrutices*, or undershrubs ; *frutices*, or shrubs ; and *arbores*, or trees.

On the method of protecting plants, or recovering plants from the effects of intense cold, &c. see a paragraph in the section entitled *Anatomy, Diet, Regimen, and Medicine*, in this introduction ; see also our articles COLD and FROST.

From the progress which Botany has lately made, there is reason for believing that the sexual system of Linnæus will, in time, give way to a more natural method of arrangement ; but it does not belong to us to lead in such a subject. We have endeavoured to describe the science of Botany as it is, rather than what it ought to be.

ACCIDENTS.

There is no situation or condition in human life, but what is liable to a great variety of serious accidents, against which it is not always possible to guard by the greatest care and foresight. It is of the utmost importance, therefore, to remember, that in every accident, one of the greatest and most powerful assistants in remedying it is PRESENCE OF MIND. In every accident happening either to others or to ourselves, we ought instantly to consider *how it may be best remedied*. This consideration will most probably excite a proper train of thought, and prevent the introduction of *fear*, which too often paralyses the mind, or renders our efforts mischievous. We have given various directions for acting in probable conjunctures, in different parts of our work ; it may be convenient to name the chief articles here. If acids of any kind have been accidentally taken by mistake in large quantities, the article AQUAFORTIS should be at once consulted.

<i>Accidents</i>	<i>Arsenic</i>	<i>Bleeding at the nose</i>
<i>Acids</i>	<i>Asphyxia</i>	<i>Blown</i>
<i>Air</i>	<i>Azote</i>	<i>Boat, the life</i>
<i>Alkalies</i>	<i>Barytes</i>	<i>Bruises</i>
<i>Aneurism</i>	<i>Bear's foot</i>	<i>Burning glass</i>
<i>Anger</i>	<i>Bed, &c.</i>	<i>Burns</i>
<i>Animation</i>	<i>Bee-sting</i>	<i>Carburetted hydrogen</i>
<i>Antidotes</i>	<i>Bite of a mad dog, see</i>	<i>Chalk</i>
<i>Apoplexy</i>	<i>also Hydrophobia</i>	<i>Charcoal, the fumes of</i>
<i>Aqua fortis</i>	<i>Blood letting</i>	<i>Cocculus Indicus</i>
<i>Aqua regia</i>	<i>Bleeding, see Wound</i>	<i>Cold, see also Travelling</i>

Combustion, spontaneous	Hydrophobia	Ribs
Conductor	Hysterics	Rupture
Copper	Infancy	Rye, <i>see</i> Poisons
Cork jacket	Infants, born apparently	Scald
Corrosive sublimate	dead, <i>see</i> Parturition	Serpent
Crab	Laurel, <i>see</i> Prussic acid	Shipwreck, <i>see also</i> Ap-
Cramp in the stomach	Laurel water, <i>see</i> Prussic	pendix Shipwreck
Cut of the finger	acid	Shoulder
Death	Laudanum, <i>see</i> Poisons	Silver, <i>see</i> Poisons
Dislocation	Lead	Skull
Drinking cold water when	Life preserver	Sotop
the body is hot	Life-raft	Soda, <i>see</i> Alkalies
Drowning	Ligature	Spirits, ardent, <i>see</i> Poisons
Drunkenness, <i>see</i> Poisons	Lightning	Sprain
Electricity	Lime	Stomach
Emetic Tartar	Midwife, <i>see</i> Parturition	Sugar
Epilepsy	Morphia	Sulphur
Fainting, <i>see</i> Swooning	Muriatic acid	Sulphuric acid
Falling down of the anus	Muscle	Suspension by the cord
Fire	Mushroom	Swallowing of bones, glass,
Fire cocks	Night life buoy	pins, &c. <i>see</i> Glass,
Fire engine	Nightshade, <i>see</i> Poisons	Œsophagus, Pins, &c.
Fire escape	Nitre, or nitrate of potash	Swoon
Fits, <i>see</i> Convulsions, Epi-	Nitric acid	Thorn-apple
lepsy, Hysterics, and	Nux vomica	Thunder
Spasms	Oil of vitriol, <i>see</i> Aqua	Tobacco, <i>see</i> Poisons
Fly, the Spanish	fortis and Poisons	Tourniquet
Fox glove	Opium, <i>see</i> Poisons	Travelling, <i>see</i> Wounds
Fractures, concerning	Oxalic Acid	Upas, <i>see</i> Nux vomica
which, <i>see also</i> Wounds	Palsy	Verdigris, <i>see</i> Copper, Cor-
Frost	Parturition	rosive sublimate, and
Galvanism	Phosphorus, <i>see</i> Aqua	Poisons
Gullet, <i>see</i> Œsophagus	fortis	Vitriol, <i>see</i> Sulphuric acid,
Glass	Plantain, the water	&c.
Gun - shot wounds, <i>see</i>	Poisons	Wasp, sting of, <i>see</i> Poisons
wounds	Potash, <i>see</i> Alkalies and	Wells, <i>see</i> Poisons
Hanging, <i>see</i> suspension	Poisons	Wounds, Bleeding, &c.
by the cord	Prussic acid	Wreck, <i>see</i> Shipwreck, <i>see</i>
Hæmorrhage	Quicksilver, <i>see</i> Corrosive	also Appendix Ship-
Henlock, <i>see</i> Poisons	sublimate and Poisons	wreck.
Henbane, <i>see</i> Poisons	Realgar, <i>see</i> Arsenic and	
Huüger	Poisons	

In accidents arising from poisons of any kind, it will be, perhaps, most advisable for the reader to refer to the GENERAL TABLE of poisons at the conclusion of our article POISONS, where will be found a compendious summary of the treatment of almost every kind of poison. More minute particulars may be afterwards obtained by careful reference to the several heads.

CHEMISTRY, *including the* PREPARATION OF MEDICINES.

The study of CHEMISTRY ought to form a part of the education of every member of Society : for in its practical application, every one is more or less interested. In order to study this science effectually, it is necessary to consider well the nature of *Attraction, Light, Heat, and Electricity*, and also the elements or first principles into which bodies have hitherto been resolved. These bodies, or elements, formerly erroneously supposed to consist of only four, namely earth, air, water, and fire, amount in number, according to our present acquired knowledge, to between fifty and sixty, of which *oxygen, chlorine, iodine, hydrogen, nitrogen, sulphur, phosphorus, carbon, boron*, and the *metals* commonly so called, as well as other substances now known to possess metallic properties, such as *potassium* and *sodium*, are deserving particular attention. The student who is desirous of understanding the principles of this science should not only direct his attention to these articles in our work, but also to our articles

<i>Acids</i>	<i>Charcoal</i>	<i>Gallic acid</i>	<i>Nooth's apparatus</i>	<i>Spirit of wine</i>
<i>Air</i>	<i>Chemistry</i>	<i>Galvanism</i>		<i>Steel</i>
<i>Ammonia</i>	<i>Cold</i>	<i>Gas</i>	<i>Oxalic acid</i>	<i>Sugar</i>
<i>Atmosphere</i>	<i>Colour-making</i>	<i>Gas-holder</i>	<i>Oxide</i>	<i>Sulphate</i>
<i>Azote</i>	<i>Crystallization</i>	<i>Laboratory</i>	<i>Poison</i>	<i>Sulphuric acid</i>
<i>Barometer</i>	<i>Distillation</i>	<i>Lime</i>	<i>Potash</i>	<i>Test</i>
<i>Brewing</i>	<i>Dyeing</i>	<i>Magnesia</i>	<i>Proportion, definite</i>	<i>Thermometer</i>
<i>Carburetted hydrogen</i>	<i>Evaporation</i>	<i>Mineral waters</i>		<i>Thunder</i>
	<i>Fermentation</i>	<i>Mortar</i>	<i>Radiant matter</i>	<i>Urine</i>
<i>Carbonic acid</i>	<i>Flame</i>	<i>Muriatic acid</i>	<i>Salt</i>	<i>Vinegar, and</i>
<i>Chemical affinity</i>	<i>Food</i>	<i>Nitric acid</i>	<i>Soda</i>	<i>Wine, &c.</i>
	<i>Furnace</i>			

Relative to the PREPARATION OF MEDICINES, our articles *Materia medica* and *Pharmacy* ought to be carefully consulted, as well as the individual subjects throughout our work, and also

<i>Calomel</i>	<i>Decoction</i>	<i>Iron</i>	<i>Poultice</i>	<i>Spirit</i>
<i>Camphor</i>	<i>Drenches</i>	<i>Laboratory</i>	<i>Quack medicines</i>	<i>Spirit of wine</i>
<i>Cerate</i>	<i>Essence</i>	<i>Liniment</i>		<i>Syrup</i>
<i>Clyster</i>	<i>Gum</i>	<i>Ointment</i>	<i>Quicksilver</i>	<i>Tincture</i>
<i>Colocynth</i>	<i>Horse-ball</i>	<i>Pill</i>	<i>Saline draught</i>	<i>Vinegar, and</i>
<i>Confection</i>	<i>Infusion</i>	<i>Plaster</i>	<i>Soda</i>	<i>Wine, &c. &c.</i>
<i>Conserve</i>	<i>Ipecacuanha</i>	<i>Potash</i>		

Our forms for the preparation of Medicines will be found very numerous. We are not aware that we have omitted one which can be of use to the domestic prescriber. When we have only mentioned the name of a compound medicine, without describing the method of making it, our reasons, in general, for omitting to do so, were the complexity and difficulty of its manipulation. We have not deemed it necessary, invariably, to mention the Pharmacopœia whence many of our forms are taken ; but the most useful from that of the London College of Physicians will be found embodied in our work ; as well as many others, not in that, nor indeed in any other Pharmacopœia.

We trust, therefore, that our readers will find in this section of our work a complete *Family dispensatory* : such, at least, it has been our aim to make it.

Although we are no friends to *quack medicines*, generally, yet it became necessary, in a work of this nature, to take some notice of them, in order that the reader may become acquainted with their preparation, and to judge of their intrinsic importance as medicines. We are enabled from peculiar sources of information to do this, and have, under the separate heads of *Beaum de vie*, *Bateman's drops*, *British oil*, *Daffy's Elixir*, *Dalby's Carminative*, *Essence of Peppermint*, *Godfrey's Cordial*, *Jones's Powder*, *Pomade divine*, *Portland Powder*, *Steers's Opodeldoc*, *Stoughton's Drops*, *Turlington's Balsam*, as well as the general head of **QUACK MEDICINES**, withdrawn the mystic veil from these nostrums.

ANATOMY, DIET, REGIMEN, AND MEDICINE.

Although a knowledge of **ANATOMY** cannot be complete without the demonstration found in *dissection*, and a study of the *natural subject*, yet, an outline of the science may, and ought to be acquired, by those who have not the opportunity of prosecuting it in a better way, through the medium of books. We have not deemed it necessary to treat of this science at large, but in a compendium under our article **ANATOMY**, and under the articles

<i>Abdomen</i>	<i>Eye</i>	<i>Life</i>	<i>Perspiration</i>	<i>Taste</i>
<i>Artery</i>	<i>Face</i>	<i>Liver</i>	<i>Pleasure</i>	<i>Teeth</i>
<i>Bile</i>	<i>Flesh</i>	<i>Lungs</i>	<i>Pulse</i>	<i>Temperament</i>
<i>Bladder</i>	<i>Ganglion</i>	<i>Mesentery</i>	<i>Respiration</i>	<i>Thirst</i>
<i>Blood</i>	<i>Gestation</i>	<i>Mind</i>	<i>Saliva</i>	<i>Thoracic duct</i>
<i>Body</i>	<i>Hair</i>	<i>Muscle</i>	<i>Skin</i>	<i>Thorax</i>
<i>Brain</i>	<i>Heart</i>	<i>Neck</i>	<i>Skull</i>	<i>Tongue</i>
<i>Breast</i>	<i>Heel</i>	<i>Nerve</i>	<i>Sleep</i>	<i>Tonsils</i>
<i>Chyle</i>	<i>Hunger</i>	<i>Nutrition</i>	<i>Spinal marrow</i>	<i>Trachea</i>
<i>Comparative</i>	<i>Injection</i>	<i>Œsophagus</i>	<i>Spine</i>	<i>Urine</i>
<i>Anatomy</i>	<i>Iris</i>	<i>Pancreas</i>	<i>Stethoscope</i>	<i>Uvula</i>
<i>Diaphragm</i>	<i>Irritability</i>	<i>Parturition</i>	<i>Stomach</i>	<i>Veins, &c.</i>
<i>Digestion</i>	<i>Kidneys</i>	<i>Pericardium</i>	<i>Sympathy</i>	

will be found a succinct account of every important part of the human body, without some knowledge of which no one can be competent to judge of disease, nor of the exhibition of medicines for its cure.

On **DIET** and **REGIMEN** scarcely too much attention can be bestowed, at least by the valetudinarian and those who are suffering under disease : for upon a proper regulation of the diet, with a due exercise of the bodily functions, and a rational control of the passions of the mind, considerably more depends in obtaining or retaining health, than upon the administration of medicine. We have, therefore, applied ourselves with some assiduity to these subjects, and intreat the reader to attend particularly to our admonitions, feeling persuaded that, if attended to, with proper discrimination, they will be accompanied with beneficial results. The articles to which we would more immediately direct our

readers are *Abstinence*,—*Aliment*,—*Appetite*,—*Bath*,—*Bed*,—*Beef*,—*Beef-tea*,—*Bread*,—*Breakfast*,—*Broth*,—*Brush*,—*Catarrh*,—*Cleanliness*,—*Diet*,—*Dinner*,—*Dress*,—*Dyspepsia*,—*Exercise*,—*Food*,—*Labour*,—*Sleep*,—*Soup*,—*Supper*,—*Tea*, &c. &c. These, and *Anxiety*, *Affliction*, *Despair*, *Happiness*, *Hope*, &c., with many others in our work which need not be enumerated here, ought to be most carefully studied by every one who is anxious for his own health, or for that of his family. To our MOTHERS, in particular, we would address ourselves, trusting that by a careful study of our work, and in which the article *Infancy* must not be neglected, they will find themselves frequently enabled to prevent many diseases; and by a firm, yet affectionate treatment of their children, without *improper indulgence*, (than which nothing is more mischievous to their corporeal and moral well-being,) they may thus see them arrive at maturity with health of body, and a vigorous and well-disciplined mind. And let our mothers never forget this important truth, that on them chiefly, on them more immediately, depends the formation of the human character, its dispositions, its habits, and its virtues.

Relative to MEDICINE, we would impress upon the reader's attention the *great responsibility of giving medicines at all times; and that it is much better in disease to give nothing than to give that of the efficacy and utility of which we are not fully aware. In truth, as much knowledge is required to determine when medicine ought not, as when it ought, to be given. The giving of it wantonly or heedlessly deserves, therefore, severe reprehension.* And in order that the reader may know when the attendance of a medical practitioner is absolutely necessary, in our observations on every disease this is invariably pointed out.

The time, however, is, we believe, arrived, which Dr. BEDDOES predicted was not far distant, when instruction concerning the causes of health and disease should form a necessary part of all rational education; and if in this our work we, in any degree, contribute to that instruction, we shall conceive ourselves eminently fortunate.

We have, under our articles BRUNONIAN SYSTEM and MEDICINE, given the outlines of the only theory of medicine which appears to be at all agreeable to the nature of things, and the human constitution. It may be useful to recapitulate that system here, in the words of the celebrated BEDDOES, whose elucidations of BROWN'S theory form, perhaps, the best monument to his own as well as to BROWN'S memory.

To every animated being is allotted a certain portion only of the quality or principle on which the phenomena of life depend. This principle is denominated *Excitability*. See EXCITABILITY.

The excitability varies in different animals, and in the same animal at different times. As it is more intense the animal is more vivacious, or more susceptible of the action of *exciting* powers.

Exciting powers may be referred to two classes: *external*, as heat, food, wine, poisons, contagions, the blood, secreted fluids, and air; *internal*, as the functions of the body itself, muscular exertion, thinking, emotion, and passion.

Life is a forced state: if the exciting powers be withdrawn, death ensues, as certainly as when the excitability is gone.

The *excitement* may be too great, too small, or in just measure. See **EXCITEMENT**.

By too great excitement weakness is induced, because the excitability becomes defective; this is *indirect debility*: when the exciting powers, or stimulants, are withheld, weakness is induced, and this is *direct debility*. Here the excitability is in excess.

Every power that acts on the living frame is stimulant, or produces excitement by expending the excitability. Thus, although a person accustomed to animal food may grow weak if he lives upon vegetables, still the vegetable diet can only be considered as producing an effect the same in kind with animal, though inferior in degree. Whatever powers, therefore, we imagine, and however they vary from such as are habitually applied to produce due excitement, they can only weaken the system by urging it into too much motion, or suffering it to sink into languor.

The excitability is seated in the medullary portion of the nerves, and in the muscles. (See **IRRITABILITY** and **NERVE**.) As soon as it is any where affected, it is immediately affected every where; nor is the excitement ever increased in a part, while it is generally diminished in the system; in other words, different parts can never be in opposite states of excitement.* See **SYMPATHY**.

We are disposed to agree with Dr. BROWN in the opinion that there are only *two* orders of general diseases; one commonly termed **INFLAMMATORY**, or *sthenic*, which arises from excessive action of the living powers, and is produced by excess of stimuli on the excitability; the other, which arises from a deficiency of stimuli on the excitability, commonly termed diseases of **DEBILITY**, or *Asthenic*. But we think Dr. BROWN has made a great mistake in the application of his theory to practice; and it is this error, we believe, which has contributed to bring his theory into question: *Inflammatory* diseases are, we suspect, much more frequent than Dr. BROWN would have us believe.

The great excellence, however, of the Brunonian theory, as applied not only to the *practice of physic*, but to the *general conduct of the health* is, that it impresses on the mind a sense of the impropriety and danger of going from one extreme to another. The human frame is capable of enduring great varieties if time be given it to accommodate itself to different states. The greatest mischief is done in the transition from one state to another. In a low state of excitement we are not rashly to induce a high state of excitement; nor, when elevated to the latter, are we suddenly to descend to the former, but step by step, and as one from the top of a high tower descends to the ground.

From hasty and violent changes the human frame always suffers; its particles are torn asunder, its organs injured, the vital principle, impaired, and disease, often death, is the inevitable consequence.

This doctrine is frequently most strikingly exemplified in persons for a long time deprived of food, persons benumbed with cold, &c. In such cases the application of a common stimulus, even in the usual

* See the *Elements of Medicine* by JOHN BROWN, M.D.; with a *Biographical Preface*, by THOMAS BEDDOES, M.D., page cxxxvii, 1795.

quantity, will very often produce dangerous consequences, and sometimes death. See *COLD, CATARRH, HUNGER, THIRST, TRAVELLING, &c.*

So, on the contrary, the *sudden* abstraction of powerful stimuli, to which we have been long accustomed, such as certain food and drink, &c., will very often produce disease: many of the paroxysms of gout may be traced to this cause alone. See *GOUT*.

The simplicity, and, we may add, beauty of these laws, are not only applicable to all animal, but to all vegetable nature. Thus, should any plant become frozen during the night, and the warm rays of the sun fall suddenly upon it in the morning, the death of the leaves generally, and sometimes the whole plant, is often the result. The remedy is either to protect the plant so as to prevent its being frozen, the most provident way; or, when frozen, to cover it from the immediate contact of the sun's rays, till its accumulated irritability is gone off; or, if it be a moveable plant, the shade of a wall will be desirable; or very cold water or snow may be applied to it: warm rooms, stoves, &c. will be invariably mischievous.

But we must hasten to conclude this section. To enumerate the articles in our work which relate to medicinal subjects is wholly unnecessary; besides the articles already mentioned in this section, *Ague, Cancer, Contagion, Costiveness, Cow-pox, Dose, Fever, Gravel, Hypochondriasis, Infancy, Insanity, Liver, Materia Medica, Parturition, Plague, Physician, Poison, Predisposition, Rheumatism, Scrofula, Small-pox, Stone, Typhus, and Wounds*, are those which are deserving the reader's most careful attention, and those also from which, we trust, much useful and important information may be obtained.

Of the treatment of the *DISEASES OF HORSES*, and other animals, it is to be lamented that so little is actually known; more especially relative to the latter. On this head our article *farriery* may be consulted, and, of course, the several diseases in the order of the alphabet. The knowledge of persons calling themselves *farriers*, in the *country*, is, in general, to be suspected; exceptions there no doubt are; but the intelligent reader will often find it to his advantage to rely upon his own judgment, assisted by our directions, rather than on the quackery of an illiterate pretender.

ARTS AND MANUFACTURES.

The *Arts and Manufactures* are undergoing continual improvement. Under this head we have collected all which appeared most practicable and useful. Besides numerous detached articles in our work, the heads *Bleaching, Bread, Brewing, Building, Colour-making, Distillation, Dyeing, Gas, Ink, Iron, Lump, Lead, Leather, Lime, Lithography, Malt, Materia Medica, Mortar, Paper, Pharmacy, Plumbery, Potash, Printing, Road, Salt, Scouring, Soap, Steam, Stone, Stucco, Sugar, Sulphur, Tanning, Timber, Varnish, Vinegar, Wine, and Wood*, may be particularly consulted.

Dum Liber astra petis, volitans trepidantibus alis
 Irruis immemori parvula gutta mari;
 Me quoque, me currente rotâ revolvibilis ætas
 Volverit in tenebras, I liber, ipse sequar.

DARWIN.



THE
FAMILY CYCLOPÆDIA

ABDOMEN.

ABDOMEN, or the lower belly, is one of the most important regions of the human body, not only on account of its various contents, but also from its exposed situation.

The abdomen extends, longitudinally from that cavity or hollow, usually called the pit of the stomach, to the lower part of the trunk : it is defended, in front, by the abdominal muscles ; behind by the *vertebræ* of the back ; and, on both sides, by the false ribs.

The whole intestinal canal forms one continued tube of greater or less capacity, beginning with the stomach, and terminating at the anus. This canal is, generally, six times the length of the whole human subject, in proportion to the person's stature, and is, by nature, divided into two distinct parts : namely, the anterior, or uppermost, which is next to the stomach, comprising what are called the thin or small intestines, which fill the middle or fore parts of the belly ; and the posterior, or lowermost, where we find the large intestines occupying the sides, and both the upper and lower parts of that cavity. The former are again divided into the *duodenum*, or twelve-inch gut ; the *jejunum*, or empty gut ; and the *ileum*, or crooked gut ; and the latter, or larger portion, into the *cæcum*, or blind gut ; the *colon*, or hollow gut, being the largest of all the intestines ; and the *rectum*, or the straight excretory gut, which terminates in the anus.

On opening the abdomen, we observe its viscera and intestines in the

following situation : after having removed the skin and the muscles, we discover the *peritoneum*, a membrane which envelopes all the viscera of the lower belly. This being divided, the *omentum*, or caul, appears floating on the surface of the intestines, which are seen in a moist and loose state, making numerous windings through the whole cavity. On the uppermost part of the belly, under the midriff or diaphragm (which separates the lungs, heart, &c. from the abdominal viscera), and towards the middle, but rather inclining to the right side, lies the liver ; and near its concave surface is the gall-bladder ; somewhat to the left, and partially under the liver, is the stomach ; and, laterally, contiguous to it, the spleen : near and under the stomach is also the pancreas. The kidneys are placed about the middle of the lumbar region, or the loins, while the urinary bladder, and the parts of generation, are situated in the lower division of the belly : in that bony cavity, which is denominated the *pelvis* or *basin*, and the sides of which form what are commonly called the hips.

The viscera of the abdomen are, in common with other parts of the body, liable to a variety of diseases, the most formidable of which are those arising from inflammation.

In order to prevent, as much as possible, the tender parts which we have now described from being injured, every person must admit the necessity of adopting such a dress as is best calcu-

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lated to ensure the ease and comfort of the body in its many functions. Hence it is obvious, that all compresses on the stomach and bowels, either by stiff stays, frequently worn by females, or by tight waistbands, or the more recent and fashionable folly of leather girths adopted by men, should be most sedulously avoided.

Abele. See *Populus Albus*, or **WHITE POPIAR.**

ABLUTION, in its literal signification, implies washing; and is usually confined to purification by the aid of water; but it may be also applied to cleansing or washing with any other pure liquid.

The importance of ablutions is very considerable, when viewed in a physical sense, as being instrumental in preserving health and beauty; and not only in preventing, but, in many cases, in removing disease. See **BATHING** and **WASHING.**

ABORTION, or miscarriage, is, in modern times, justly considered a misfortune. The symptoms indicating abortion, are cold shiverings of short duration; nausea seldom accompanied with vomiting; pain about the loins, but more frequently in the abdomen below the navel, and in the thighs; depression and softness of the breast; palpitation of the limbs; and more especially of the heart; sinking of the lower belly; and a discharge of various appearance from the uterus.

One of the most general expedients adopted to prevent a miscarriage, has been periodical blood-letting, either from the arm or foot; but, according to the opinion of experienced practitioners, bleeding is advisable only in particular cases; and then, even the taking away of from four to five ounces of blood twice in the course of four or six days, is generally sufficient to obviate the most urgent symptoms.

The most effectual method of preventing such accidents consists in a regular mode of life previous to pregnancy, aided occasionally by bracing remedies, such as the cold bath, moderate exercise on horseback or on foot,

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the use of mineral waters; in short, all those means which tend to counteract nervous and hysteric debility, or, in other words, which are proper for irritable habits. Yet the strictest observances of diet will not be attended with the desired effect, unless the person, who is desirous of becoming a mother, have sufficient resolution to abstain from an immoderate indulgence in sensual pleasures. These, indeed, cannot be too much guarded against in a marriage state, as the contrary practice seldom fails to be attended with the most melancholy consequences. Hence we find, that in certain families, where temperance and prudence are strictly observed, a miscarriage is a rare event.

The most critical periods at which abortion may occur, are those of the third, fourth, and fifth months of pregnancy, though it may happen sooner or later. If, therefore, a woman be affected with a violent shooting pain in the back, extending to the uterus, together with the symptoms already described, it will be necessary either to bleed her, if she be of a full and vigorous habit, or to adopt the use of a very moderate and chiefly liquid nourishment, excluding whatever may rouse and irritate the system; and a calm and composed state of body and mind; and to prevent a relapse of painful symptoms she must sometimes keep her bed for weeks or months together. Cataplasma applied to the pit of the stomach, and opiates, may be occasionally necessary; but the latter ought rarely to be resorted to without medical advice: for tampering with laudanum, or similar medicines, has often been productive of mischief. Although the state of the bowels, in a woman disposed to abortion, is by no means to be disregarded, yet we advise all prudent females, who are pregnant, to have recourse to purgatives with extreme caution; and more especially so, when symptoms of abortion are manifest.

ABSCESS is a soft and circumscribed tumour, containing matter, generally attended with fluctuation, and some-

times with considerable pain. It is the consequence of some previous inflammation.

The mode of treatment to be adopted in the cure of an abscess will be to assist its complete suppuration, and promote a free discharge of matter; all remedies, therefore, which have a tendency to soften the skin and encourage perspiration, are eminently useful. In languid habits, and when the suppuration proceeds slowly, it will sometimes be necessary to open it, either by caustic applications or the lancet.

Warm fomentations and emollient cataplasms, made either with bread and milk, or oatmeal, renewed several times a day, are the usual poultices for abscess. We, however, recommend as a poultice for sluggish and obstinate abscesses and boils, bread or oatmeal made of a proper consistence, by gentle boiling in the grounds of porter, ale, or strong beer, instead of milk, to which may be added, a small portion of olive oil to keep it supple; if the grounds be acid so much the better.

In large tumours, from which the discharge of matter has been considerable, and especially those of the lower extremities, it will often be necessary to have recourse to such internal remedies as may strengthen and support the system. Bark, wine, and if considerable pain or irritation prevail, opiates, judiciously administered, will be highly beneficial. But these will be found generally more advantageous after the abscess has begun to discharge. In many instances, where the discharge evidently weakens the patient, good and home-brewed malt liquor, drunk in moderate quantities, will be found eminently useful.

After an abscess has been opened, it must be kept clean, and dressed either with dry lint or some mild digestive ointment, once or twice a day, assisted by a compress or linen bandage.

ABSTINENCE may be defined the habit of refraining from what is either useful, agreeable, or pernicious. The term abstinence denotes also the limitation of any usual indulgence, for

the purpose of preserving health and removing the consequence of excess.

Abstinence, in the preservation of health and the cure of diseases, is of considerable importance. Sydenham informs us, that he has often cured inflammatory and other fevers by prescribing diluent drinks, and prohibiting every kind of aliment, even, to use his own words, *for three or four days*.

Dr. Miller of New York says, that in those states of the body which denote the approach, and at the commencement of acute diseases, the strict observance of a rigid and continued abstinence has been productive of the most beneficial effects. And the celebrated Dr. John Brown particularly enjoins it, as one of the means to be employed in the prevention and cure of sthenic, or inflammatory diseases; and he declares that the inflammatory sore throat, and the catarrh or common cold, attended with hoarseness, may often be cured by abstinence alone.

Men of genius, and persons who lead sedentary lives, are more especially benefited by abstinence; as these, from the want of vigorous exercise, and their intense application, are generally the severest sufferers from diseases of repletion. In the use of abstinence, due regard must always be paid to the age, strength, constitution, and habit of the patient; it is of importance to keep in mind, that all violent and sudden transitions from one mode of life to another are most carefully to be avoided.

Relative to the total abstinence of the sexes from sensual gratification, it may be observed, that it is sometimes attended with serious effects; yet these do not often take place in those who live regularly, somewhat abstemiously, and do not encourage libidinous ideas; and that both males and females would probably derive greater benefit from total continence till marriage, than by an indulgence in venery.

ACACIA, in botany, Egyptian thorn:—a species of *mimosa* growing in Egypt. It is also found in North America, and is there called the *locust-tree*. Its culture is not difficult; it

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delights more in a dry, sandy, and elevated soil ; but may be raised in any, either from seeds or slips.

The leaves of acacia are said to afford an agreeable nourishment to horses and horned cattle ; they may be given either green or dry, alone or mixed with hay or chopped straw.

The flowers of the acacia are used by the Chinese in making that beautiful yellow with which they stain their silks and stuffs, and colour their paper.

An inspissated juice, of the fruit of acacia, of a dark colour and firm consistence, has been brought to us from Egypt ; when dissolved, it has been recommended in any convenient liquor for spittings of blood, complaints of the eyes, and quinsies. It is, however, not heard of in modern medical practice.

The acacia of North America has been applied to various parts of ship-building ; and it has been found to resist the influence of the weather, when used for posts and railings, &c. superior to any other timber, the swamp cedar not excepted.

But in England, the acacia being an exotic, is supposed to be of a tender and delicate nature ; and it has not hitherto, in its growth, afforded the advantages which the American acacia holds forth. See GUM ARABIC.

ACACIA the FALSE, or *Robinia pseudo-acacia*, L. is a native of North America and the northern parts of Asia. This beautiful and valuable tree flourishes best in sandy soils, mixed with light black earth, especially in the vicinity of brooks, springs, or rivers, where it grows with uncommon rapidity. It may be propagated by setting the seeds, and when it is once introduced, numerous plants may be obtained by cutting its roots near the surface of the ground.

The leaves and tender shoots of the False Acacia are eagerly eaten by cattle, particularly by sheep ; and they also afford a wholesome fodder. Being very hardy, this tree retains its verdure during the severest winters.

The sweet and succulent roots of the

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False Acacia are well calculated for fattening hogs. The seeds, after being divested of their acrid taste by infusing them in different waters, and afterwards ground into meal, are, by the Tongusian Tartars, converted into bread ; the seeds are also eagerly eaten by poultry, which may thus be speedily fattened.

The leaves of this tree, when prepared in the same manner as *indigo*, may, it is said, be substituted with great advantage for that expensive dyeing drug. Neither the wood of this tree, nor its leaves, are liable to be attacked by worms or insects.

ACCIDENTS. There is no situation or condition in human life but what is liable to a great variety of serious accidents, against which it is not always possible to guard by the greatest care and foresight. It is of the utmost importance, therefore, to remember, that in every accident, one of the greatest and most powerful assistants in remedying it is PRESENCE OF MIND. For want of this desirable self-possession many a person has lost his life, and the mischiefs arising from unforeseen accidents have become irremediable. If the mind be overwhelmed by fear, or astounded by alarm, it is utterly impossible that deliberate measures can be taken to secure either our own safety or the safety of those who happen to be about us, and in the same predicament with ourselves. We repeat, therefore, that it is a proof of the truest wisdom to cultivate, and endeavour to preserve as much as possible, in all extraordinary and unexpected situations, either of body or mind, or both, that chief requisite in every accident, for acting with coolness, judgment, and effect—PRESENCE OF MIND.

Accidents from fire. See FIRE, FIRE ESCAPE, &c.

Accidents from water. See SHIP-WRECK, DROWNING, &c.

Accidents from travelling. See TRAVELLING.

Acetic acid. See VINEGAR.

Acetous acid. See VINEGAR.

ACIDS, in chemistry, are the names of a comprehensive class of salts, which

possess the following properties : sourness of taste ; a power of changing blue vegetable colours red ; and of combining with all the alkalies and most of the metals, metallic oxyds, and earths, by which means those compounds are formed which are called neutral salts ; such as *sulphate of soda* (Glauber's salt), *nitrate of potash* (salt-petre), *sulphate of copper* (blue vitriol), *muriate of soda* (common salt), &c. &c. Although every acid does not possess all these properties, yet they all possess a sufficient number of them to distinguish them from other substances. The form under which acids most commonly appear, is that of a transparent liquor, in which case they are generally combined with a greater or less quantity of water ; several of them are, however, found in a solid state, which some have supposed is their natural condition.

Acids are obtained both from minerals and vegetables. The acids at present known, amount to more than forty. But the acids in most common use, particularly in medicine, are the following : the acetic, acetous, benzoic, carbonic, citric, muriatic, nitric, nitrous, and sulphuric.

The vegetable acids, such as the juice of limes, lemons, oranges, apples, &c. are obtained without the aid of much art, and are eminently useful in a variety of diseases. They attenuate the fluids, remove obstructions, stimulate the appetite, promote digestion, quench thirst ; and, in hot seasons, counteract the putrid tendency of the animal humours : they afford an excellent remedy in pectoral, bilious, and inflammatory diseases, but particularly in the true scurvy, and also in diseases of the kidneys. They have been, also, found exceedingly useful in counteracting the effects of opium, and other vegetable narcotic poisons, if given *after* such poison has been expelled from the stomach. As a substitute for the acid of lemons, *BARBERRIES* are sometimes used : see that article.

The use of vegetable acids, to persons who are habitually obliged to take considerable doses of opium, cannot

be too strongly recommended. In the form of clysters, the mild vegetable acids, such as vinegar diluted with an equal quantity of water, are said to be a safe and effectual remedy for costive habits.

The mineral acids, however, are productive of very different effects. When applied, in a diluted state, to the human body, whether externally or internally, they generally contract, and gently stimulate, the animal fibre ; but, in a concentrated form, they violently stimulate, corrode, and destroy its texture. With respect to their comparative activity, the nitric and nitrous acids are the most volatile, the sulphuric acid the most diffusible, and the muriatic acid, perhaps, the most active and permanent in its effects on the human system. For the method of treatment, when acids have been taken internally by mistake, see *AQUA FORTIS*.

ACIDULATED WATERS, a species of mineral waters which contain a considerable quantity of carbonic acid, and which are known by the poignancy of their taste, the sparkling appearance which they assume when shaken, or poured from one vessel to another, and the facility with which they boil. Many of these mineral waters have been imitated by art ; and fashion has brought into use an acidulated water, known under the term of *soda water*, which has been much drunk amongst the higher order of invalids, as a remedy for dyspeptic and calculous complaints, and obtained more celebrity, than, perhaps, it ever deserved : when medicine, even if good, is converted into our daily aliment, it generally ceases to act as a medicine. See *SODA WATER*.

Aconite. See *WOLFSBANE*.

ACORNS, the seeds of the oak, although not at present an article of human subsistence, yet ancient writers relate that they formed no small part of the diet of the Germans and Britons ; and the desire to possess, what was then considered a table delicacy, was often a cause of hostilities between various nations. They have seldom been used

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for medicinal purposes. They afford, however, a nutritious food for hogs, which are readily fattened by their use.

Acorns possess an astringent quality, which may be extracted by steeping them in cold water, or boiling them. On expression, they also afford an oil which may be advantageously used in the burning of lamps.

Acorns may be preserved for a considerable time, and will retain the power of vegetation by being encased with wax. In this manner they may be transported to distant climates, and preserved in a fresh state for years, so that they may be transplanted with hopes of success.

ACRE, a quantity of land, containing four square roods, or 160 square poles or perches. The perch, in England, measures $16\frac{1}{2}$ feet. The acre is also divided into ten square chains of 22 yards each, that is, 4840 square yards. An acre, in Scotland, contains four square roods; one square rood is 40 square fells; one square fell 36 square ells; one square ell nine square feet, and 73 square inches; one square foot 144 square inches. The Scotch acre is also divided into 10 square chains: but the length of the Scotch acre chain is, to that of the English chain, as 8928 to 7920. So that the Scotch acre is to the English acre, as 100,000 to 78,694. The French acre, *arpent*, contains $1\frac{1}{2}$ English acre, or 55,206 square English feet, whereof the English acre contains only 43,560. The Strasburg acre is about half an English acre. The Welsh acre contains, commonly, two English acres. The Irish acre is equal to one acre, two roods, nineteen perches, $1\frac{1}{2}$, English. According to the latest accounts, England and Wales contain about 28 millions of cultivated acres, of uncultivated more than 9 millions; the whole 37,265,855 acres. See CHAFN.

Action Water. See MINERAL WATERS.

ACUTE DISEASES, are such as are either attended with inflammation, or other urgent symptoms, which bring on an early crisis, and render them dan-

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gerous in their consequence: hence they are opposed to *chronic diseases*, or those which, though of slower progress, may, nevertheless, terminate in dissolution. We shall treat of them under the different heads of APOPLEXY, ASTHMA, (*suffocative*), CHOLERA MORBUS, COLICS, CONVULSIONS, CRAMPS, or SPASMS, EPILEPSY, FEVERS, FRACTURES, HYDROPHOBIA, INFLAMMATIONS, &c. &c.

ADDER, in zoology, a name for the viper. See VIPER.

Adder-stung, is used in respect to cattle, when stung by any kind of venomous reptiles, as adders, scorpions, &c. or when bitten by a hedge-hog, &c. For the cure of such bites, some persons use an ointment made of dragon's blood with a little barley-meal and the whites of eggs.

Adder-wort. See *Great Bistort*.

ADULTERATION is the corruption, or debasement, by an improper mixture of any substance that was originally in a pure state. This art has been carried to a great extent in the present times; and although our laws have provided penalties for various adulterations, there are, we are sorry to say, too many which they cannot possibly reach. We shall endeavour to point out those articles which are liable to this species of fraud. They will be found, for the most part, under the different heads of BEER, BREAD, COFFEE, HAIR-POWDER, HONEY, OIL, SNUFF, SPIRITS, TEA, TOBACCO, VINEGAR, WAX, WINE, &c. &c.

ADVERTISEMENT is a public notice or information relative to any matter or thing, either inserted in a Newspaper, or other public print, or circulated by hand-bills. We notice this article to caution the unwary, and to animadvert upon the fraudulent practices to which the advertisements of the present day are too frequently subservient: for instance, those of money-lenders, servants, office-keepers, agents for place-men, adventurers, marriage-brokers, and other unprincipled individuals who prey upon the credulity of the public; to which may be added, the

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variety of puffs, and advertisements, relative to cures by Quack medicines, of no, or very doubtful, virtues. So much has this last ramification of trading advertisements been extended, that not only is almost every Newspaper crammed with them, but in almost every corner of the metropolis, persons are stationed with bundles of hand-bills of various kinds, to invite the attention of the invalid, the credulous, and the inconsiderate. We advise the public generally, and more especially those who are not yet acquainted with the mischiefs of advertisement puffing, to consider every advertisement, with more than common pretensions, as possessing in itself the character of a *bait*, and that therefore it ought, if attended to at all, to be scrutinized with more than common care and circumspection; and we recommend this precaution more particularly relative to medicine, knowing it is upon the subject of health, about which all, more or less, feel anxious, that mankind are most easily, and soonest beset and deceived.

ÆTHER, a term formerly used to signify a thin subtle matter finer than air, and completely filling the whole space of the firmament.

ÆTHER, in chemistry and medicine, is a combination of sulphuric acid, and rectified spirits of wine, or alcohol, and is used for a variety of medical purposes. It is the lightest and most volatile of known liquids. The head ache may be sometimes cured by rubbing it on the temples and forehead, which, by its rapid evaporation, carries off the extraordinary heat of the head. A tea-spoonful, applied to the affected jaw in the tooth-ache, will sometimes relieve this distressing malady. It has also been used in rheumatism, gout, and whooping cough, with success. In a paroxysm of suffocative asthma, and all those diseases where the organs of respiration are affected, half a tea-spoonful of sulphuric æther, in a table spoonful of water, quickly swallowed, and occasionally repeated, has often produced instant relief. Even the simple evaporation of this volatile fluid, a spoonful of which may be

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placed at a time in a shallow vessel contiguous to the patient, has frequently been found of service, and alleviated the most distressing shortness of the breath.

Æther may also be made from a few other acids, but sulphuric æther is that most commonly in use, and best known.

AFFECTION signifies a state of mind in which the tender and domestic attachments to, and feelings for our species are more particularly interested and engaged: it appears to occupy a middle space between disposition on the one hand, and passion on the other. It is distinguishable from disposition, which being a branch of one's nature originally, must exist before there can be an opportunity to exert it upon any particular object; whereas affection can never be original, because, having a special relation to a particular object, it cannot exist till the object has once at least been presented, or at any rate, till its qualities have been either orally, or by written communication, conveyed to the mind. Affection is clearly distinguishable from passion, as we may possess an affection for a friend, a father, a brother, a sister, a mother, &c. Passion is a strong and intense emotion of the mind; affection a more steady and consistent one, and has frequently no relation whatever to sex. When we are told in the Scriptures that we must "Crucify the flesh with the affections and lusts," we apprehend that the affections there meant, are not those of the kind of which we are now speaking. Affection is assuredly a disposition of mind most desirable to be encouraged, and contributes much to the ennobling of our nature.

"Friend, parent, neighbour, first it will embrace,

Our country next, and next all human race."

AFFLICTION, as opposed to a state of joy and prosperity, cannot be called a disease, although when indulged to excess, it may be, and frequently is, productive of many mental and bodily affections. Hence we cannot be too much upon our guard against the invasion of passions, which may be truly styled the greatest enemies of mankind.

AGE

Dwelling upon the subjects, causes, and consequences of affliction, is at all times most mischievous, and therefore the best remedy for mental affliction, is the *being employed in some useful and active pursuit, in which the mind shall feel an interest, and be engaged at the same time with the body.*

AFRICAN MARIGOLD, an annual flower much cultivated in gardens for the beauty of its colours. *Tagetes L.* There are eight species, natives of South America, or the Canaries. Three of the species are cultivated in Great Britain. They are propagated by sowing the seeds in spring, in a moderately hot bed: when the young plants come up, they must have air allowed them, and when three inches high, should be removed to another hot bed, which should be arched over with hoops, that it may be covered with mats. They are to be planted here at about eight inches distance, and when they are grown stronger, about the beginning of May, they are to be taken up with a ball of earth about their roots, and placed where they are to remain, either in a nursery, in pots, or about the borders of the flower garden.

After Birth. See **MIDWIFERY.**

AFTERMATH, the second crop of grass which springs up after mowing, or the grass cut after corn. In the neighbourhood of London, the aftermath, when made into hay, is of considerable value. But in drying it so as to render it wholesome for horses and cattle, great nicety is required; the nature of the aftermath being more soft and spongy than grass of the first growth. See *Hay*.

AGARIC of the oak, or the *Agaricus Quercinus, L.* has been sometimes used as a styptic, when applied to external wounds, but although this and another species, namely, the common *puff-ball*, have occasionally stopped hemorrhages, we by no means recommend a reliance upon them; and only think their use justifiable, when other and more effectual means are not at hand.

AGE signifies any period of duration. It is used indiscriminately to express many objects, and situations, but is

AGE

more frequently applied to the latter, or advanced periods of human life; and, in this sense, is accompanied with the epithet *Old*.

Human existence has been divided into four distinct periods, viz. infancy, youth, manhood, and old age. The gradation through these successive stages is often slight and imperceptible; it may be either accelerated, or retarded, according to the more or less prudent conduct of the individual, the mode of life which is pursued, and the various rules and precautions observed in diet, regimen, &c. That temperance is conducive to long life is generally admitted: all irregularity and excess, must inevitably shorten the sum of human existence.

Old age, when accompanied with other good qualities, is more especially entitled to respect and reverence; but if marked by ignorance, folly, and the too common attendant upon it—an indifference to the feelings and wants of our fellow creatures, and a selfish shrinking within itself, and looking only to its own gratifications, then, indeed, old age becomes both disgusting and contemptible. See *Longevity*.

AGE of a Horse may be known by the front teeth of the lower jaw, until he is in his eighth year; after that, some judgment may be formed of his age by the front teeth of the upper jaw, until he is about twelve or thirteen. These latter marks are, however, not to be depended upon like the former; but if at the same time the horse's countenance be considered, with some marks which we shall point out, an experienced person will seldom be led astray by them.

When a colt is foaled, he has no teeth in the front of his mouth, but in a few days, two above and two below make their appearance, and soon after them four others: after this it is generally three or four months before the corner teeth, as they are termed, appear: these twelve teeth in the front of the mouth, are small and white, and continue without alteration till the colt is about two years and a half old, when he begins to shed his teeth, the two front teeth above

and below, being the first which made their appearance, are the first which fall out; the new and permanent teeth are considerably stronger and larger than the colt's teeth. Between the third and fourth year, the two teeth next to them above and below fall out, and are succeeded by the permanent teeth; and between the fourth and fifth year, the next or corner teeth are changed. The horse is now said to have a full mouth of permanent teeth; during the fourth year the tusks appear; though sometimes, but rarely, they appear before the fourth year. The four front teeth arrive at their full size in two or three weeks, but the corner teeth do not grow so quickly, being at first but just above the gums, and filled with flesh on the inside. At five this fleshy appearance is lost, but these teeth continue for some time much less than the others, and they seldom lose their shell-like appearance until five and a half, when they have a dark colour on their surface, like the other teeth. At six years, the dark-coloured cavity is much diminished, appearing something like the eye of a bean that has advanced in length; still the mark or cavity is very conspicuous. At seven, the corner teeth are become a little longer, and the mark smaller. At eight the mark is lost. After this period you may judge of the age by the marks or cavities in the upper teeth. About ten, the two front teeth have lost their marks, the two next have but little left, but in the corner teeth they are readily seen; but these gradually wear out, and during the twelfth year are totally erased. The tusks, like the teeth, are gradually changing their form: at first they are small, sharp, and shell-like, having a remarkable concavity on their inner surface, but gradually become larger and longer: the concavities on their insides also lessen: at about eight years they are nearly lost.

At twelve, sometimes earlier, the inside of the tusk begins to approach towards a round form, and after that gradually becomes quite round, blunt at the top, and of a yellow

colour. About the age of fourteen or fifteen, white hairs often appear above the eyes, and grey horses become lighter in colour; and when very old, they become white. The teeth of horses, as they advance in years, become longer and more oblique in their position: they acquire also a yellowish colour. That the reader may understand this description more completely, we advise him to make a frequent and attentive examination of the horse's mouth.

AGE of Cattle. The age of neat cattle is known by their horns. Till the third year their age is sufficiently indicated by their general appearance; they then change their horns for a permanent pair; these have a kind of button or circular protuberance of horn at the end next the head: the following year the button is impelled forward by a new shoot of horn, which has a button next the head like the former. The same process takes place annually during the animal's life. These protuberances take the form of a ring round the horn, which is easily distinguished, and by which the age is known; counting three years for the point of the horn, and one for each ring.

AGE of Sheep is known by their teeth. In their second year they have two broad teeth before; in the third year they have four; in the fourth, six; and in the fifth, eight. After this period, the age cannot be accurately known by the teeth. The age is indicated also by their horns, which are not changed as in the cow, but have an additional ring every year; only one year is to be counted for the point of the horn. The age of the goat is known in the same way, and that of Deer by an additional branch appearing every year in the palm of their antlers, or horns.

AGILITY. See ATHLETIC ART, or GYMNASTIC EXERCISES.

AGONY, is a term used to signify an extreme degree of pain, or the last pangs of death. The terror of death, appears in a great degree occasioned by the contortions and convulsions with which the agony seems attended; although the general opinion of Physiologists is, that in such cases the sensations

of pain are not very acute; a course of affliction during sickness having indisposed the nerves for any quick sensations.

AGRICULTURE is the art of cultivating the earth, so that it may produce the vegetables which we desire in their greatest perfection.

Previous to the establishment of the Romans in this country, the art of agriculture was but little known in Britain; by their assistance, however, it experienced considerable improvements, inasmuch that they were enabled annually to export large quantities of grain from this island. Subsequent to this period, it has been continually advancing in its progress; and by the great encouragement it has of late experienced from the more enlightened classes of society, it bids fair to attain a high degree of perfection.

Whether we consider agriculture as the means of procuring, as well the necessities, as the comforts and luxuries of life; of providing a security against the calamities of scarcity, famine, and disease; or of engaging the mind in active and extensive pursuits of general knowledge, it is one of the most useful and important of all the arts which have employed the attention of mankind. Its theory is in a great measure dependent on several branches of science, such as natural history, chemistry, experimental philosophy, and mechanics; all of which may be successively applied to its advancement; and without a competent knowledge of these it cannot be properly understood. Its practical part, however, may be carried on independently of scientific experiments. No person, therefore, need be deterred from attempting any improvements, because he is not conversant with the more abstract parts of physical knowledge.—This art is eminently useful, not only for supplying our immediate wants, but because it furnishes us, to a considerable extent, with the means of commerce: for the quantity of corn which we do not want for our own use and consumption, may always find a ready market, if exported to other countries.

The successful advancement of this rural art depends upon two circumstances; the one, its improvement by discovery or invention; the other, a more extensive practice of such improvements when fully demonstrated. The former is effected by the contrivance of more perfect machines and implements of husbandry, which facilitate the progress of labour;—the introduction of new articles of profitable culture, and the most advantageous method of treating those which have already been cultivated, though in a defective manner. The latter, namely the practice, relates not only to future improvements, but likewise to those which, though generally known, have been either wholly neglected, or adopted only in particular places.

Various plans have been devised for the purpose of encouraging agriculture, such as the inclosure of waste lands, the draining of fens and morasses, the construction of inland canals, &c. The various agricultural societies in Great Britain, amongst which we may name the Board of Agriculture, and the Bath and West of England Agricultural Society, as foremost, have done, and will we hope continue to do, much service to this valuable and interesting science.

Agricultural pursuits must always constitute one of the principal employments of the mass of mankind; it is, therefore, both the interest and the duty of the higher classes to contribute every thing in their power towards alleviating the burthens inseparable from the lot of the husbandman: for so long as that valuable body of the people, in a state who cultivate the soil, were stimulated to habits of industry, and encouraged in the practice of domestic virtues, we find no example, in the pages of ancient or modern history, that such a nation ever suffered a general calamity.

We cannot close this article without mentioning the names of some of the illustrious patriots who have so materially contributed to the scientific progress, and successful practice of agriculture in this island: viz. the DUKE OF BED-

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FORD, LORD SOMERVILLE, SIR JOHN SINCLAIR, MR. COKE, MR. ARTHUR YOUNG, &c. &c.

For an account of the different subjects connected with agriculture, we refer the reader to the articles as they are classed in the order of the alphabet. See also HUSBANDRY.

AGRIMONY, COMMON, *Agrimonia eupatoria*, L. is an indigenous plant, which grows in elevated situations, and is frequently met with about hedges and roads.

In a medicinal view, the leaves of this vegetable are said to be useful in laxity of the intestines, in scorbutic and other diseases of debility.

The leaves and stalks, together with the closed flowers, afford a dark yellow decoction, which, when previously impregnated with a solution of bismuth, imparts a beautiful and permanent gold colour to animal wood. The blossoms of this plant have also been occasionally used by tanners for curing soft and delicate skins.

AGRIMONY HEMP; or *Eupatorium cannabinum*, L. is likewise a native plant, and grows chiefly on the banks of rivulets, and near hedges.

In dyeing, the leaves with the addition of logwood, and boiled with a proper solution of green vitriol, yield a good black colour.

AGUE, a disease which is most frequent in marshy and fenny countries. It is a fever having periodical intermissions, which is denominated *quotidian* when the fit occurs every day; *tertian* when it occurs every other day; and *quartan* when it occurs upon every third day. The last species is generally the most obstinate, and most difficult to be cured.

Agues are frequent attendants upon weakly constitutions in certain situations; such as the county of Kent, the fens of Lincolnshire, and the marshy and boggy districts of Somersetshire, &c. They more commonly attack the poor than the rich, children than grown persons, and also those who are exposed to the debilitating atmosphere of flat countries.

AGU

That the poor are more liable to agues than the rich, may principally be ascribed to the difference of their diet, clothing, &c. and an exposure to a damp and unwholesome atmosphere. Hence moderately warm rooms, warm clothing, and good living, are the best preventives of the ague.

The symptoms generally observed during the cold fit in agues are strong shiverings and a sensation of cold over the whole body; to these succeed great heat, with the usual concomitants of fever, extreme thirst, quick pulse, &c.; this is terminated by a perspiration more or less profuse, according to circumstances. The patient, during the absence of the fit, is most commonly enabled to attend to his customary occupations; and, in recent cases, does not appear much the worse for the attack. The duration of the fit is irregular in respect to time, seldom subsiding in less than three or four hours, and not often continuing twelve. The accession of the fit is also sometimes very uncertain, varying its times at each attack;—at other times its approach is quite regular. When the fits are continually shifting their times of attack, they are generally supposed to be more easily cured.

If the ague be suffered to continue long, it weakens and exhausts the constitution; the appetite becomes considerably impaired, jaundice, dropsy, and other diseases attendant on debility, frequently occur.

During the fit, from its commencement, the patient may drink freely of warm water, thin gruel, and other warm diluents. We have reason to know that warm fluids taken into the stomach, in the early part of the attack, will contribute to shorten the fit altogether; but cold water, in the cold fit, must by all means be avoided.

When the fit is gone off, it will be best, as far as medicine is concerned, to have recourse to the peruvian bark at once: an ounce of it in powder, divided into eight doses, one of which taken twice a day, when the fit is not on the patient, will frequently remove the dis-

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ease; if this should not do it, a second, or a third ounce rarely fails to effect a cure, provided that the patient is careful to keep his feet warm, to go rather more warmly clad, to live better than usual, and to avoid as much as possible all night and morning air in the open fields.

The state of the bowels in this disease is by no means to be disregarded; a purging pill taken at night going to bed, composed of colocynth, aloes, and scammony, will be the best for the purpose of keeping the bowels regular. The pills known by the name of pills of *Coccia*, or compound colocynth pills, are, we believe, the best. One or two pills, about the bigness of a large pea, will generally produce one motion extraordinary, and that will be sufficient. Emetics may sometimes do good by cleansing the stomach, but, in general, we think, it is better to avoid them. All violent purgatives, with glauber's, or Epsom Salts, &c. are decidedly wrong: for as the ague is, beyond question, a disease arising from debility, every thing which increases that debility must do mischief.

It does, however, sometimes happen that the bark, although taken in powder, which is the most efficacious way that it can be taken, will not remove the ague; in that case an addition of ten grains of subcarbonate of potass, and five of snake root, in powder, to each dose, will be found very advantageous.

The folly of placing any dependence upon charms, and other stupid nostrums, requires no other notice than to say, that they have, of course, constantly failed.

If the ague should not be conquered by the means which we have recommended, there is a preparation of arsenic, to be obtained in the shops, which has been sometimes given with success when other medicines have failed. As, however, it is a medicine the exhibition of which cannot be safely entrusted to inexperienced persons, we advise the patient, in such a case, rather to apply to a regular medical practitioner, than to run the risk of doing mischief in the

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administration of such a powerful medicine.

AIR, COMMON, or Atmospheric, is a colourless, transparent, compressible and elastic fluid, and one of the most important elements, whether we consider its application to purposes of general economy, or its effects on animated nature. It is the medium through which we breathe, and without which we cannot exist. It surrounds the terrestrial globe to a certain height, the entire mass constituting the atmosphere.

The great fluidity of air is manifest from the facility with which bodies traverse it; as in the propagation of, and easy conveyance which it affords to sounds, odours, and other effluvia and emanations that escape from bodies.

The weight or gravity of the air is a property belonging to it as a body: for gravity is a property essential to matter, or at least a property found in all bodies. Air can be weighed like any other body; a vessel full of common air is found, by a nice balance, to weigh more than when the air is exhausted from it; and the effect is proportionably more sensible if the vessel weighed be full of condensed air, and more still if it be weighed in a receiver void of air. Upon the elasticity and pressure of air it is that the common pump depends for its usefulness and operation.

Air was for many ages considered as a simple homogenous fluid, and it was not till toward the end of the last century that it was found to be a compound substance. This point, however, has been clearly ascertained by the discoveries of modern chemists, particularly those of Drs. PRIESTLEY and BLACK, Messrs. CAVENDISH, LAVOISIER, FOURCROY, &c. Common air, therefore, is composed of two gases, of which one, called *oxygenous gas*, forms 26 or 27 parts by weight, and the other, *azotic gas*, or *nitrogen*, forms 74 or 73 parts; or about 22 parts of the former and 78 of the latter by bulk. These proportions are found the same in whatever part of the world the experiments are made, or from whatever height in the atmosphere the air is obtained.

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Oxygenous gas has also been called *vital air*, because it is the only ingredient in atmospherical air which can support life or combustion. Thus if an animal be inclosed under a bell glass he will live in it till all the oxygenous gas is absorbed by his breathing, and then he instantly dies. The same takes place when a candle is inclosed under similar circumstances. Hence the necessity and importance of this fluid to animal existence; but although only about one-fourth of atmospheric air is proper for the support of life and combustion, it yet appears that such a mixture is more advantageous for animal life than if the air consisted of oxygenous gas alone, evincing the wisdom of the Creator in providing such a pabulum for the whole of animated nature.

In diseases of the lungs and epidemics, arising from a confined or vitiated atmosphere, the administration of air in a pure state has been attended with singular success.

Air vitiated by the different processes of respiration, combustion, and putrefaction, or which is suffered to stagnate, becomes prejudicial to the human frame: hence large cities, public assemblies, hospitals, burying grounds, &c. are injurious to health, and often productive of contagious disorders. And although the chemical analysis of the air taken from the streets of a crowded city, and from the open country, produces the same constituents, as far as observation has hitherto gone; yet we are obliged to conclude, from the evidence of facts, that there is something mixed with the air of a crowded city, extremely injurious, both to animal and vegetable life, which the skill of philosophers has not yet been enabled to detect.

Plants and vegetables possess the wonderful property of restoring the purity of air. This, however, takes place only in the day-time, and when they are exposed to the light of the sun: for at night they discharge their noxious particles, and corrupt the atmosphere. Nevertheless, the disadvantage arising from their impure exhalation

during the night, is far exceeded by the benefits produced in the day-time; as the former does not amount to a hundredth part of the pure vital air (oxygenous gas,) which is generated by the same plant, in the course of two hours of a fine day.

Noxious and mephitic vapours, arising from wells and other subterraneous places, may be effectually corrected by simple ventilation, or the admission of such portions of vital air as will render the whole respirable.

To ascertain whether the air of a mine, well, cellar, or large cask, be safe, a lighted candle, suspended by a cord, ought to be conveyed to the bottom, before any person ventures to approach it. Should a slight explosion take place, or the light burn dimly, or even be extinguished, the air is certainly noxious; but if the flame continue bright, no danger is to be apprehended.

An easy expedient of purifying foul air may be adopted, by pouring quantities of boiling water into such receptacles before any person be suffered to descend:

Or take a leather tube, of sufficient length to reach the bottom of the shaft, well, or cellar; fix the nozzle of a pair of bellows to the top, and work them briskly for a few minutes; thus fresh air will be introduced, the flame of a candle, on trial, will not be extinguished, and we may descend without danger.

To avert the injury to which artisans, who are employed over charcoal fires, such as dyers, gilders, refiners of metals, &c. are exposed, it would be advisable to place near them a broad flat-bottomed vessel filled with lime-water, and to renew it every other day, or as often as a variegated film or pellicle appears floating on the surface of the water; which powerfully attracts and absorbs the pernicious exhalations produced from the burning charcoal.

The following places, in the vicinity of London, are said to have been found, in the spring season, to be most congenial to consumptive persons, viz. Camberwell, Peckham, the lower parts of Clapham, the drier parts of Lambeth,

Battersea, Fulham, Chelsea, &c. As the more temperate season advances, the higher situations, such as Paddington, Pentonville, Highbury, Hampstead, Highgate, Blackheath, &c. may then be resorted to with advantage. See OXYGEN and NITROGEN.

AIR-INFLAMMABLE. See HYDROGEN.

AIR-BATH, in its general acceptance, implies a contrivance for the reception of *fresh* air. All persons, but especially children, ought to resort, at least for a short time *every day*, to this method of enjoying the salubrious influence of that universal agent. Dr. Franklin informs us, that every morning, at day-break, he got out of bed and passed half an hour in his chamber, according to the season, in writing or reading, without any clothes; and this, he adds, seems rather pleasant than otherwise.

AIR-JACKET, a dress made of leather, in which are contained several bags or bladders, composed of the same materials, and communicating with each other. By the help of these bladders, which are placed near the breast, the wearer is supported in any water without making an effort to swim. We doubt, however, the utility of the air-jacket in assisting a person to swim. See the article SWIMMING.

Aix-la-Chapelle, See MINERAL WATERS.

ALABASTER, a kind of soft marble, the basis of which is lime; mixed with any acid no effervescence takes place; in this respect it differs from marble. There are various kinds of alabaster, and of various colours. It is found in many parts of the world, and in abundance in several districts in England. See GYPSUM.

ALARUM, a term employed to signify any instrument, or contrivance, for the purpose of awakening persons from sleep at a certain hour, or of alarming them when exposed to danger. In the former sense, it is generally a part of clock-work, and deserves here no further notice; but in the latter, we strongly recommend the

utility of alarums to every family, whether living in towns or in solitary situations in the country. Many ingenious inventions have been devised, for affording security to the industrious, against the audacious attempts of house-breakers: the most common of these are hanging bells to the windows, or larger bells and rattles kept in readiness for giving early notice to the watchmen absent from duty, or to the peaceful neighbour, whose aid is required.

ALBUMEN, properly signifies the white of an egg, but is now also used to denote one of the radical parts of animal matter, and so called, as possessing the properties of the white of an egg; it is also, occasionally, found in the juices of vegetables.

The white of eggs, if taken warm from the hen, is esteemed nourishing to the weak and infirm; but when boiled hard, its nutritive quality is, in a great measure, destroyed; and it then becomes very difficult of digestion.

The white of a fresh egg, applied to burn immediately after the accident, generally prevents them from rising in blisters: it also tends to abate recent inflammation of the eyes, if spread upon soft linen and placed over the parts affected. Used as a lotion on the face, it preserves it from sun-burning or freckles in the heat of summer. On the contrary, a very small portion of the white of an egg, if swallowed in a *putrid* state, is attended with dreadful effects; such as nausea, horror, fainting, vomiting, diarrhoea, and gripes, accompanied by heat, thirst, fever, and a variety of other disagreeable and alarming symptoms.

The white of eggs is usefully employed in clarifying ale, wine, &c. for which purpose it should be mixed with the liquor, and the whole boiled together: thus all the gross particles of the latter will subside, or be carried off with the former, which, by this process, is reduced to a concrete state, and is either precipitated or combined with the feculent ingredients of the liquid.

Vegetable Albumen, is one of those

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primary constituents of plants which may be separated by chemical aid, without their undergoing any change of their native or inherent qualities. See the article EGGS.

ALBURNUM, the soft white substance in trees, between the inner bark and the wood, gradually acquiring solidity, and becoming genuine wood. Also the fluid that ascends through the vessels in spring-time. Both are also called *sap*.

ALCHEMY is the pretended act of transmuting metals into gold, or of changing the inferior into the more precious ores. It was formerly much cultivated by fanatics, as well as by learned but deluded men: it is now, however, generally exploded, and is pursued only by crafty impostors.

ALCOHOL, in chemistry, signifies spirit of wine completely freed from water. Alcohol is the product of saccharine matter, obtained from numerous vegetable substances and juices, by the processes of vinous fermentation, and is separable from the grosser substances with which it is mixed, by the common methods of distillation. Although brandy, rum, arrack, geneva, malt-spirits, &c. differ much in colour, taste, smell, and other properties, the spirituous part, or alcohol, is the same in all: their peculiar properties depending, generally, upon the presence of some essential oil and water in varied proportions.

Alcohol may be obtained from every body which has undergone the vinous fermentation. It is found in every kind of malt liquor, cider, perry, and wines; and in proportion to the quantity contained in each of these respectively, in addition to their peculiar flavour, is their goodness and quality to be estimated. The poorest wines, malt liquors, cider, &c. containing little alcohol, and the better articles of each kind respectively, containing more alcohol, by which they are preserved from decay, and, if kept from the air, will remain, comparatively, unchanged for years. See SPIRIT OF WINE.

ALDER-TREE, or the *Betula* of

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L. is so well known, as to require no particular description. There are three species, the *alba* or common; the *nana* or dwarf; and the *lenta* or Canada-birch; the last of which grows to a height of upwards of sixty feet. Whenever any soil be intended for pasture, the alder should by no means be encouraged, as it poisons the herbage, and renders the soil moist and rotten.

All the parts of the alder-tree are more or less astringent and bitter. The bark is a strong styptic. And the juice of the fresh leaves of alder are employed to dismiss the milk from the breasts of women with success.

On deeply wounding, or boring the trunk of this tree, in the beginning of spring, a sweetish juice exudes in large quantities. By fermentation, with the addition of sugar, it makes a pleasant wine.

The wood of this tree, on account of its hardness, is employed, in the north of Europe, for making carriages and wheels. In France it is generally used for wooden shoes; and in England, for women's shoe-heels, travelling boxes, &c. In Sweden it is employed for covering houses, and is very durable.

The *alba*, or common birch, is easily propagated; either by seeds or layers, and will flourish in most soils. While in the nursery they should be constantly weeded and watered.

ALE is a fermented liquor, extracted from malt, by the process of brewing. It differs from beer in having a less proportion both of malt and hops. This beverage was first made in Egypt, and used as a substitute in those climates which were unfavourable to the production of the grape.

There are various kinds of ale, particularly the pale and brown, the former being brewed from malt slightly dried, is esteemed more glutinous and wholesome than the latter, which is made from malt more highly dried. The term *ale*, indeed, is applied, in different parts of England, to malt liquors of very different qualities; and it is, therefore, not a little difficult to give such a general definition of this liquor, as

shall be applicable to the whole island.

Ale may be prepared in various ways—from wheat, rye, millet, oats, barley, &c. Its consumption in this country was, about thirty years ago, computed at the value of four millions sterling annually, including Great Britain and Ireland. For some years past, the consumption of malt liquor, generally, has been considerably upon the increase, in consequence, amongst other causes, of the deficiency, for a long period, of the crops of apples in the cider counties, the last year excepted. See BEER and BREWING.

In cold countries, and to persons who take considerable exercise, ale may be of service; but in weak and lax habits, its use is often attended with disagreeable effects, such as indigestion, flatulency, &c. When drunk to excess, it has sometimes occasioned *cholera morbus*, and severe cholics, more especially if it happened to be thin and weak.

A method of preserving ale from turning sour, on long voyages, was published in the 27th number of the Philosophical Transactions, by Dr. Stubbs. It is said to have been tried with success. To every rundlet of five gallons, after being placed in a cask on ship-board, not to be stirred any more, put in two new-laid eggs whole, and let them lie in it; in a fortnight, or little more, the whole egg-shell will be dissolved, and the eggs become like wind-eggs, inclosed only in a thin skin; after this the white is preyed on, but the yolks are not touched or corrupted, by which means the ale was so well preserved, that it was found better at Jamaica than at Deal.

We confess that we do not exactly understand the principle of this process: if the egg-shells be dissolved in the acid, as it is formed in the ale, and, of course, neutralized by the lime in the shells, we think that a portion of slacked lime, tied up in a bag, and suspended in the liquor, would be a far preferable mode.

ALE-HOUSE, a public place of

resort for drinking ale or beer.—Houses of this description are licensed by Justices of the Peace, who take recognizances of the landlord, and sureties in ten pounds each, that they will not suffer unlawful gaming, or other disorderly practices in their houses. Every person, excepting those who sell ale in fairs, neglecting to procure a license, is liable to a penalty of 40s. for the first offence, 4l. for the second, and 6l. for the third, with all costs. The license is granted on the first of September, or within twenty days after, at a general meeting of the justices for the division to which he belongs, upon his producing a certificate to his character, unless, by living in a city or a town corporate, this last circumstance is dispensed with, and continues in force for one year. Ale-house keepers selling ale in short measures, are liable to a penalty not exceeding 40s. and not less than 10s.; and likewise to a fine of 10s. for permitting tippling, &c.

ALE-MEASURE, is the measure by which ale, beer, porter, &c. are sold. The ale pint contains $35\frac{1}{2}$ cubic inches. Eight of which make one gallon; nine gallons one firkin; two firkins, 18 gallons, one kilderkin; two kilderkins, 36 gallons, one barrel: two barrels, 72 gallons, one hogshead.

ALIMENT. By this term is understood the nutritive quality of such substances as are dissolved and mixed in the stomach, and converted into chyle by the digestive process. It may be considered rather as the consequence of food taken by a healthy individual, than as an article of food itself: for all kinds of animal and vegetable bodies do not furnish alimentary supply in the same proportion.

Of those articles which afford it in the highest degree, animal food is the principal; being most easily digested, and furnishing a greater quantity of that milky fluid called *chyle*. But the qualities of animal food are, notwithstanding, exceedingly various: the proportionate powers of animal food may be classed in the following order, the first named being the most stimulant

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and nutritious, and the last of the lowest and least value in the scale : as an article of nutrition, *fat* must always be considered as of secondary importance, and, least of all, *rancid* or *roasted* fat, in every shape, whether used in pastry or otherwise. In this arrangement we wish to be understood as speaking of the human body in a state of weakness or disease, as it is well known, that when the system is in vigorous health, a variety of meagre and inefficient food will answer even better than the most nutritious aliment where sound health is absent. Beef roasted, mutton roasted ; beef boiled, mutton boiled ; hare roasted, wild fowl roasted, tame fowls roasted, tame fowls boiled ; eggs raw ; pork roasted, veal roasted ; pork boiled, veal boiled. Of fish—oysters raw, shrimps, lobsters, crabs, other shell-fish known to be wholesome—soals, turbot, eels, salmon. Other animal food might be mentioned, but we do not think it necessary to increase the list. Upon the whole, there is no doubt that beef stands at the head of animal matter, as furnishing aliment for the human body, and that fish, and principally the oleous class of these, are least congenial to the human frame. The reader is not, however, from the above list, to conclude that, with every constitution, animal food is equally stimulant and nutritious in the order here laid down : from the diversity of organization, it sometimes happens, that an article of lower apparent powers of stimulation will suit the diseased organs of one patient, better than another of known superior powers : the most that can be done, in a work of this kind, is to lay down general rules upon the subject of aliment ; we cannot enter into what has been termed, the *idiosyncrasy*, the particular constitution of every patient : this is more peculiarly the province of the physician, and in a just discrimination here, no considerable portion of his skill depends.

Amongst the articles of vegetable diet, affording aliment in considerable quantity, we may enumerate the following, to which we refer, under the

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heads *ARROW-ROOT*, *RICE*, *SAGO*, *SAL-LEP-POWDER*, *TAPIOCA*, &c. We may also mention *WHEAT-FLOUR* as an article affording considerable nutrition, but as it is enveloped in much matter which frequently disagrees with the stomach, and produces considerable flatulence and acidity, it is not found so desirable in its crude state ; nor, even with long-continued boiling or baking, are all its bad qualities neutralized. Hence the mischiefs arising from *new bread*, *pastry* of most kinds, &c. See *FOOD* and *DRINK*.

Alisma Plantago, L. See *GREATER WATER PLANTAIN*.

ALKALIES, in chemistry, signify those substances which possess the following properties, viz. they are incombustible ; capable of converting a vegetable blue to a green colour ; they manifest a hot and caustic taste, and readily corrode the flesh of animals ; are soluble in water, and combine, in various ways, with acids, forming new bodies of very different qualities, from either their pure state, or from the acids with which they combine.

Alkalies are divided into two kinds, fixed and volatile. The fixed are subdivided into vegetable and mineral ; the former, being the production of burnt vegetables in the open air, is called potash, and, when very white, pearl-ash ; and the latter has sometimes been found native in the earth, although soda is now generally obtained from the ashes of marine plants after they are burnt, chiefly from the different species of glass-wort, or *salsola of Linnaeus*, as well as from other saline vegetables growing near the sea-shore (see the article *BARILLA*) ; it may also be obtained, by chemical process, from common salt—which is a combination of soda with the muriatic acid.

Both the fixed alkalies endure a very intense degree of heat without dissipation, and are used in the composition of glass.

Volatile alkali, or *ammonia*, is produced, by distillation, from animal substances ; in its pure state it is an invisible gas, and so pungent to the smell, that it cannot be approached without great danger. See *AMMONIA*.

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All vegetable substances contain potash in greater or less proportion ; plants near the sea-shore particularly excepted. It has been found, that one pound of the ashes of horse-chesnuts yields nearly six ounces and a half of potash ; nay, the same quantity of the burnt husks produced more than six ounces. But, according to accurate analysis, the greatest quantity of vegetable alkali is contained in the fruit of the Spanish lilac, or *syringa vulgaris*, *L.* the ashes of which yield more than one half of pure alkali, or eight ounces and three drachms to a pound.

It is said, that the dry or withered leaves* of the beech-tree, the *fagus sylvatica*, afford the vegetable alkali in great abundance, insomuch that ten pounds weight of the ashes thence obtained, are equal to thirty pounds of common wood-ashes. See SOAP, SODA, POTASH, and WASHING.

Alkalies are either mild or caustic. In the first state, the state in which they are usually found, they are combined with carbonic acid, which moderates their action, and which causes them to effervesce with acids. In their second, or caustic state, the carbonic acid is commonly separated from them by lime, which thus renders them more pure, and increases the energy of their action.

As the fixed alkalies readily combine with greasy and oleous matters, they afford a convenient substance for mixing with water for washing and purifying the floors of dwelling-houses from that filth and sordes with which, after a short period, most, without ablution, do not fail to be tainted : indeed, it is the opinion of a very respectable American physician, Dr. Mitchell, that infection is uniformly prevented and extinguished by the use of alkalies in the purification of rooms : a consideration, of course, of infinite importance.

If, by any accident, alkalies have been given by mistake, or in large quantity, the best remedy is vinegar or lemon-juice. In a case of poisoning of this kind, give several glasses of water mixed with a spoonful of vinegar

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or lemon-juice : or, not having these at hand, simple water, in such quantities as to cause vomiting. Emetics, or other irritating means, are, however, to be avoided.

ALKANET, a rough, hairy, perennial plant, the *anchusa tinctoria* of *L.* with unbranched procumbent stalks ; of the bugloss kind, and differing from the common buglosses chiefly in the red colour of its roots. It grows wild about Montpelier, and in the eastern countries, and is cultivated in some of our gardens ; but the roots produced in this climate are paler coloured than those which we receive from abroad. The only use to which the root is applied, is for colouring oils, plasters, lip-salves, &c. which receive a fine deep red from one-fortieth their weight of the root : the unctuous materials are, for this purpose, to be made hot, and the root digested in them for some hours.

The Spanish wool, or *Charta hispanica*, is said to be prepared from this root.

The following directions have been given for obtaining from it a beautiful purple lacker : take two ounces of the root finely powdered, and boil a few minutes in a lixivium made of potash sufficiently diluted ; and after the liquor has grown cold, precipitate the colouring matter with a strong solution of roach alum. The precipitate must be dried, *without being washed*, for use.

Of eight species of the anchusa, one only, the *anchusa sempervirens*, is indigenous to this country ; but all the species may be propagated by seeds.

ALL-HEAL, CLOWN'S or MARSH WOUND-WORT, the *stachys palustris* of *L.* is an indigenous plant, growing on the sides of rivers or lakes, in moist grounds, and sometimes in corn-fields. It has a fetid smell, and bitter taste. Linnæus informs us, that the creeping roots of the all-heal are sought after with avidity by hogs ; and that, from their farinaceous nature, they would well repay the trouble of collecting and converting them into flour for the purpose of making bread.

ALLSPICE, *Myrtus Pimenta*, Pimento, or Jamaica Pepper. The berry in its smell resembles a mixture of cinnamon, nutmegs, and cloves, whence its name. It is a very useful and cheap spice. In medicine it forms the basis of a distilled water, a spirit, and an essential oil, in which different forms it is efficaciously employed, as an aromatic for cold and phlegmatic habits. The oil possesses properties so much like oil of cloves that it may be mistaken for it; and is, perhaps, of equal efficacy with that expensive drug. It is sometimes of service when applied upon lint to carious teeth to prevent their aching, its pungency destroying, as it were, for a time, the sensibility of the nerve. See **SPICES**.

ALMANAC, a term derived from two Arabic words, *al* and *manac*, a diary; and is, as its name imports, an annual table or register, containing a calendar of days and months, the time of the rising and setting of the sun, the age of the moon, and the eclipses of these luminaries; the feasts and other remarkable days are also noted particularly in it. It also contains a kind of prophetic indication of the weather throughout the various seasons of the year; the ebb and flow of the tide, &c. &c.

A great number of such diaries are annually printed in Great Britain. Of the celebrated *Moore's Almanac* were sold, some years ago, annually, about 400,000, notwithstanding all the silly and superstitious notions which it contains. Latterly, however, we believe that its sale has much declined, arising in some measure, no doubt, from the increased good sense of the age, which can be no longer imposed upon by such trumpery; and a heavy stamp duty of one shilling and three pence laid upon every almanac, has, perhaps, also contributed to impede its circulation.

It is much to be desired that such publications as are addressed immediately to the bulk of the people should be made the vehicles only of useful information and important facts; whe-

ever is concerned in drawing up such works should remember, that there is no excuse for the propagation of folly.

ALMOND, a tree eminent both for fruit and for the ornament which it affords to the shrubbery. It is the original of the ancient genus *amygdalus*, and, by the botanic character of the flowers, comprehends also the peach and nectarine. Botanists admit but one real species of the common almond tree, which they term *Amygdalus communis*.

Sweet almonds are supposed to afford but little nourishment, and are not easily digested, unless thoroughly triturated. In medicine, they are chiefly used for preparing emulsions.

Almonds, as well as nuts, ought to be eaten only while fresh and without their skins; they should be well chewed, for every piece swallowed entire is nearly indigestible. The use of a little salt, however, renders them miscible with our fluids as a saponaceous mass; but if indulged in to excess, they are productive of alarming, and sometimes fatal disorders.

The expressed oil of almonds, which is generally obtained from bitter almonds, in consequence of their cheapness, is used for a variety of purposes in medicine; but, except in the property of not coagulating by cold, as olive oil does, we do not know that it is, in any respect, better than the latter oil. In the arts, particularly those of the clock and watch-maker, the quality of not coagulating by cold renders it a more proper oil to be applied to mechanical movements, to abate their friction, than any other oil with which we are acquainted.

Almonds, or almond-cake, upon being submitted to distillation, yield a small portion of poisonous matter, now denominated *prussic acid*. Hence it appears that all distillations from almonds, almond-cake, or indeed from kernels of almost any fruit, are more or less deleterious, and ought to be avoided: laurel-water appears to possess similar qualities. The liquor sold in the shops

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under the name of *noyeau* ought for the same reason never to be drunk. See LAUREL-WATER.

Almonds are propagated by budding on plum or peach stalks in the month of August, at such height as may correspond to that of the stem intended to be raised: at the expiration of two years the trees may be finally planted out.

ALMS, are charitable donations to the poor. It is not a little difficult to determine how far alms-giving ought to be encouraged. Christianity constantly recommends the practice of benevolence, and the frequent distribution of alms; and Swift very emphatically remarks, that the poor beggar has a just demand of alms from the rich man; who is guilty of fraud, injustice, and oppression, if he do not afford relief according to his abilities. There are some situations of human life which more imperiously demand our charitable interposition than others: it may be laid down as an incontrovertible maxim; *that ACTUAL AND IMMEDIATE WANT, be the object whoever he might, OUGHT TO BE RELIEVED, whatever might have been his previous character.* An indiscriminate refusal to give to strangers is not unfrequently more mischievous than giving indiscriminately to all who ask. Certain it is, that many persons have preferred to live by begging rather than to follow an industrious occupation; but upon the whole it will be safest to err on the side of apparent mercy, and the recording angel will not be likely to set our alms down to us as wrong. At all events, *infancy, sickness, and old-age*, have imperious demands upon us according to our means.

ALMS-HOUSES, are asylums for the support and maintenance of a certain number of poor, aged, or infirm persons during their lives. When these institutions are of a *private* nature, and limited in their extent, they are beneficial to society: yet it may on the whole be doubted, whether such *public* establishments, especially as they are generally managed, under the absolute control of rapacious trustees, do not in-

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a great measure tend to relax the springs of industry, and encourage habits of indolence, for by accustoming people rather to resort to eleemosynary sources, than to exert their own strength and abilities, they cannot fail to degrade the moral feelings of human nature, and to destroy that independence which constitutes its noblest support. See CHARITY and HOSPITALS.

ALOE, is a beautiful exotic plant; the flowers which grow in umbels on the tops of the stalks, are of an elegant red colour, and appear in the months of August and September. It consists of ten species, all of which are propagated either by off-sets, or by planting the leaves. The proper earth for this vegetable, is one half of garden mould, or fresh earth dry from a common; the other half consists of an equal proportion of white sea sand and sifted lime rubbish. This mixture should be made at least six or eight months previous to its use. The common aloe will live in a dry green-house in winter, and in summer may be placed under shelter in the open air; but should have very little water, and none on the stem of the plant; the other species require to be kept in an airy green-house, in which there is a stove to make a fire in cold weather.

Its properties are various, and applied to numerous purposes both medicinal and domestic. The leaves of the Guinea-aloe, as described by ADAMSON, are employed in making very good ropes, not liable to rot in water.

In this country the aloe is principally known as a medicine in the form of an inspissated juice, which, in the shops, is kept under four names, viz. the *Socotrine*, the *Hepatic*, the *Cape*, and the *Barbadoes* aloes. *Socotrine* aloes are obtained from the island of Socotra, but they are a scarce article, and their place is now more commonly supplied by the hepatic aloes, which are brought from the East Indies; or by two parts hepatic and one part Cape, being dissolved in water, strained, and the water evaporated by boiling till the aloes become hard. This mixture, we believe,

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forms as good socotrine aloes as any which can be obtained, and we have reason to know, that much of what is sold in Great Britain under the name of socotrine aloes, is prepared in London in this manner. *Cape aloes* are brought from the Cape of Good Hope, and are of a shining and dark resinous appearance. *Barbadoes aloes* are brought from the island whose name they bear, and are the most powerful of all, consequently they are not often given, except to horses and cattle : one ounce of which, with a drachm of castile soap, and half a drachm of ginger in powder, make an excellent purging ball for a horse.

Socotrine aloes, when given in doses of a few grains, repeated at intervals, not only cleanse the alimentary canal, but tend also to promote the menstrual discharge in women : hence their use in green sickness, and all female obstructions.

They do not seem to be so efficacious when given alone in substance ; or at any rate, they do not operate so expeditiously and kindly. They seem to operate best by being previously combined with some saponaceous matter, castile-soap, an alkaline salt, or mucilaginous vegetable extracts. They form, upon the whole, one of the most valuable medicines of the materia medica. Aloes may be given in substance, in doses from three to twenty grains ; in larger doses they occasion commonly a great irritation about the anus, and sometimes a discharge of blood ; hence in hypochondriacal patients, where the hæmorrhoidal flux is desired to be encouraged, they afford one of the best means for this purpose : and, what is of no trifling consideration in the taking of purgatives, they do not usually leave the body costive after their operation, as many other purgatives do. Aloes enter into a variety of compositions of the shops. The medicine long known under the name of Pill of Coccia, is a composition of Aloes, Colocynth, and Scammony. The celebrated Scotch Pills are principally composed of this valuable drug.

ALU

But whether in the simple state, or when compounded with soap, bitters, and other substances, the form of pill is to be preferred on account of the nauseous taste of the medicine. And, except in very particular cases, it will be found that all aloetic medicines, made up into pills, operate best, and most kindly, by being taken a few minutes before going to bed at night,

Aloes, in watery solutions, are useful for preserving tender plants from the depredations of vermin and insects ; and in preventing putrefaction in certain vegetable and animal bodies, such as dried plants, stuffed birds, quadrupeds, &c.

It is said that aloes, when swallowed by dogs or cats, operate upon them as poisons.

ALUM, is a concrete salt, composed of alumina, or clay, potash, and sulphuric acid. It is found native in some places, but the greater quantity of the alum of commerce is prepared by a peculiar management of schistose pyritic clays, usually denominated alum ores. At La Tolfa, near Civita Vecchia, where the best Roman Alum is made, the ore is *alum-stone* ; but at other places, both on the Continent and in Great Britain, it is *alum state*. At Hurlett, near Glasgow, the largest alum-mine in this country, the schistus lies ten inches thick above coal.

Although the ancients were certainly acquainted with alum, yet the first regular works appear to have been established by the Asiatics, in the middle ages, particularly at Roccha, in Syria ; whence the name, *Roch-alum*. After this period, works were begun in Italy, Germany, and Spain ; and in England, in the reign of Elizabeth, by Sir T. Chaloner, who established the first alum-work in England, at Gisborough, in Yorkshire. The largest manufacturers of alum at present, in this country, are Lords Dundas and Mulgrave, at Whitby, in Yorkshire.

The best alum is the Roman, which is in irregular, octahedral crystalline masses, powdery on the surface. The English is in large irregular semitrans-

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parent colourless masses, having a glossy fracture and not efflorescent; and rock-alum from the Levant, is in small pieces, rather friable, and of a pale rose colour. The most recent analysis of alum makes its composition, sulphate of Alumina 36,85, sulphate of potash 18,15, and water 45,00. But it also, generally, contains ammonia, and none of the alum of commerce, except the Roman, is free from a minute portion of iron.

In medicine, alum is considered a powerful astringent. It is used, both internally and externally, for restraining violent hæmorrhages, and other immoderate secretions. It is likewise used in lotions and eye-waters:—and also in gargles in sore throat, relaxation of the uvula and thrush; in injections in cases of gleet, leucorrhœa, &c.

The dose in hæmorrhages is from six grains to a scruple, repeated every hour till the bleeding abates: in other cases, smaller doses are more advisable; larger being apt to nauseate the stomach, and occasion obstinate constipation. It is sometimes administered dissolved in the serum of milk, in the form of whey, which is prepared by boiling two drachms of powdered alum in a pint of milk, and straining it. The dose of the whey is from two to three fluid ounces.

Alum is used in various operations connected with the arts in considerable quantities; by Dyers, by Tanners, by Tallow-chandlers, &c. &c. Its principal use in dyeing, seems to be to fix the different colours upon the cloth.

It is also said that bakers generally use it as an ingredient in bread; and there are different opinions as to the good or harm which it is calculated to do to the human constitution under such circumstances. Alum cannot be mixed in bread in very large quantities without its being discoverable by the taste; but we think, in as much as alum in bread must produce, more or less, costiveness in most persons who eat it, the practice ought to be discouraged, although it is very possible that some constitutions may be benefited by the use of such bread.

AMB

On macerating a small piece of the crumb of new-baked bread in cold water, sufficient to dissolve it, the taste of the latter, if alum has been used by the baker, will acquire a sweet astringency; or a heated knife may be thrust into a loaf before it has grown cold, and if it be free from that ingredient, scarcely any alteration will be visible on the blade; but, in the contrary case, its surface, after being allowed to cool, will appear slightly covered with an aluminous incrustation.

Alum may be readily applied to purify and sweeten water which has become fetid, and unfit for use: by adding only from five to ten grains of it calcined, to every gallon of water, according to its impurity, and double or treble that proportion of powdered charcoal, the most offensive water will become by these means perfectly sweet and pellucid; both ingredients, however, ought to be kept in close vessels, otherwise their efficacy will be considerably diminished.

Amourosis. See GUTTA SERENA.

AMBER (*Succinum*,) is a hard bituminous substance, possessing a subacid, resinous taste, and, when heated, emits a fragrant, aromatic smell. It is the production of many countries. It is dug out of the earth in Ducal Prussia, near the sea-coast, and is thrown in considerable quantity, on the sea-shore of Polish Prussia, and Pomerania, particularly after tempestuous west or north-west winds. It is also found in small quantities on the east coast of Great Britain, and small pieces of it, of superior quality, are occasionally found in the gravel-pits round London. The largest piece of amber ever found, was met with near the surface of the ground in Lithuania, and is now preserved in the royal cabinet at Berlin. It is evidently of vegetable origin, the lumps occasionally inclosing pieces of twigs and insects in their substance. It is commonly of a golden yellow, or brown colour, but occasionally colourless, and it is electric. It is used in commerce in the manufacture of beads for ornament.

As a medicine, amber is at present but in little repute. Formerly it was used in a variety of ways, but of late the powerful oil, which is obtained from it by distillation, is the only one of its preparation which is in use. This oil is a stimulant and antispasmodic. It has been found serviceable in deficient menstruation, hysteria, and epilepsy; but is now, except by empirics, rarely administered internally. The dose may be from five drops to twelve, taken upon lump sugar, or mixed with water by means of mucilage. It is more generally employed externally in rheumatism and palsy; a mixture of one fluid ounce of this oil, with half a fluid ounce of tincture of opium, has been found beneficial as a friction to the affected part in the painful disease, called *tic douloureux*: and in whooping-cough, rubbed upon the chest twice or threetimes a day. This oil is kept in the shops under two forms, *common* and *rectified*. It is also an ingredient in the quack-medicine called *BRITISH* oil (see that article.) Amber also affords an acid called by chemists the succinic acid, formerly, salt of amber; but it is now scarcely used medicinally.

This bituminous matter constitutes the basis of several kinds of varnish. It is used for the coating of various toys, for staining the papier maché, and for the varnishing of carriages; for which last purpose, however, it is more profitable to dissolve the gum copal.

To make *amber varnish*, melt the amber slowly in a crucible till it becomes black; then reduce it to a fine powder, and boil it in linseed oil, or in a mixture of this and the oil of turpentine. See *VARNISH*.

AMBERGRIS, or grey amber, is a solid opaque substance, of a greyish or ash colour, usually intermixed with yellow or blackish veins. It has been sometimes found, by those persons who frequent the southern whale-fishery, in the belly of that fish, in lumps from half an ounce to one hundred pounds in weight; and, indeed, from some recent facts and experiments which have been made, there is a strong ground for

believing that it is formed in the alimentary canal of the *physeter macrocephalus*, or spermaceti whale; and that, as it is specifically lighter than water, after being discharged from the animal, it floats on that element, and is thrown upon the shores of the sea in the southern regions of the globe, the East and West Indies, &c.

It is remarkable that this substance, which is the most sweet of all the perfumes, should be capable of being imitated in smell by the preparation of one of the most odious of all fetid substances, the human fæces.

Ambergris was formerly esteemed a cordial, but now chiefly serves as an agreeable perfume, and is 'certainly free from many of those inconveniences which usually accompany substances of this description. The following is an elegant preparation of it, sold in the shops under the name of *Essence of Ambergris*. Take of Ambergris half an ounce, of musk one drachm, of refined sugar half an ounce, of rectified spirits of wine one pint and a half: bruise the whole together, and let them digest in the spirits of wine for at least fourteen days, frequently shaking the bottle, then filter for use.

AMBITION, in ethics, is the passion which prompts men to value or seek any kind of eminence or distinction, as well as to avoid degradation and reproach. It appears to be a kind of compound of admiration and desire, and becomes either a virtue or a vice, honourable or disgraceful, useful or pernicious, according to its direction or degree. When our ambition is gratified at the expense of the rights, pleasure, convenience, or comfort of others, there can be no doubt of its evil tendency, and that, in such cases, it ought to be repressed, not encouraged. If a just estimate be formed of the ambition of those persons usually called *conquerors* and *heroes*, it will be generally found that such ambition is erected on an improper basis, and ought to be repressed instead of being, as it too generally is, applauded and encouraged by the world. When ambition is directed to the im-

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provement and happiness of our species, to our comforts and melioration, to the preservation and not to the destruction of human life, it becomes meritorious, and cannot be too much applauded and encouraged. Some philosophers have proposed to attempt the extirpation of the passion of ambition from the human mind, merely in consequence of having observed the baneful effects with which it is too commonly attended; but we believe that the desire of distinction is innate, and if so, to annihilate that desire is impossible: the obvious remedy is to direct our ambition into channels of virtue and benevolence, and its effects will no longer be deplorable but meritorious. The same thing may be predicated of the child as of the man: hence the obvious offices of instruction.

AMBURY, or **ANBURY**, in farriery, a soft spongy tumour, sometimes met with in horses and cows. It is of various sizes, often less than a mulberry, which it not unfrequently resembles in colour; at other times it is as large as an apple of the middle size. It generally appears about the nose, but is sometimes found in other parts of the body. When wounded it bleeds freely; therefore the cure is generally attempted by some escharotic application. The following has often proved successful.

Take of powdered Alum two ounces,

Water one pint,

Sulphuric acid one drachm,

mix them together.

When they are small and numerous, or if they have a wide base, this application may be safely used, particularly when professional assistance cannot be procured. If the tumour should be attached to the body by a slender neck, it may be cut off with perfect safety; and if there should be occasion to stop the bleeding artificially, a circumstance we have never known, the red-hot iron may be applied for this purpose. After the ambury has been removed, the part should be touched with nitrate of silver, (lunar caustic,) for three or four days, to prevent the tumour from growing again.

AMM

AMMONIA, or **VOLATILE ALKALI**, is composed of about eighty parts of azote and twenty of hydrogen, rendered gaseous by caloric, in which form only it is in a state of purity; although the name is very commonly applied to a solution of the gas in water, forming the spirits of Hartshorn, spirits of Sal Ammoniac, &c. of the shops.

Ammonia is capable of combining with several acids, as the sulphuric, nitric, muriatic, boracic, fluoric, carbonic, &c. forming with them so many neutral salts, distinguished by the names sulphate of ammonia, nitrate, borate, fluat, carbonate, &c. When Ammonia is made to pass through ignited charcoal it forms with it prussic acid.

The *sub-carbonate of ammonia* is one of the chief forms in which ammonia is given medicinally. It is known in the shops under the common name of smelling salts, volatile sal ammoniac, or salt of hartshorn. Ammonia, in all its forms, is one of the most powerful stimulants, and is given in a variety of diseases of debility with good effect, either in the shape of carbonate, an acetate, or in the liquid form of spirits of hartshorn, or the more elegant preparation, commonly known under the name of *Sal volatile*, the *Aromatic Spirit of Ammonia* of the London Pharmacopœia. Although physicians have been too often in the habit of prescribing, and ordering to be kept in the shops, a great variety of medicines, and some of them of very trifling value, we call our readers' attention to ammonia and its compounds, as of the first importance, and without which the healing art would be lamentably deficient. The dose of the sub-carbonate of Ammonia is from five grains to a scruple; of the liquor of ammonia, from ten to twenty drops or more; of the aromatic spirit of Ammonia, from half a fluid drachm to a fluid drachm. Ammonia is also used as a powerful stimulant externally, to disperse obstinate swellings, where suppuration is not desired, and also to rheumatic and paralytic limbs; the bite of a viper, rattlesnake, &c. which see; see also **SAL AMMONIAC**.

AMP

AMMONIAC, is a concrete, gummy, resinous juice which is obtained in Persia from a plant, there called *Oshauk*, supposed to be the same as the *Fashook* of the Arabians; it grows to the height of about six feet: it bears leaves only on the joints near the ground, where they grow thickly around the stem, which at the root is two inches in diameter. In the month of May, while the plant is soft, an insect of the beetle kind begins to puncture the stem in every direction, with his proboscis; as the stem shrinks and dries, there exudes from these punctures a milky juice, which flows down and indurates near the joints, whence it is gathered about the end of July. It is brought to England sometimes in large lumps, the tears having run together apparently by heat; and sometimes in the state in which it is obtained from the plant, in separate drops: the latter form is accounted the best; about a pound is commonly collected from one plant.

This gum has a nauseous, sweetish taste, succeeded by a sensation of bitter, and a smell somewhat resembling, but more grateful than galbanum.

In medicine it is a stimulating expectorant and anti-spasmodic; and is, in large doses, purgative. Externally it is discutient and resolvent. It is prescribed with advantage in asthma, chronic catarrh, and some other affections of the thorax; but, on account of its stimulating properties, it must be avoided where any inflammation of the chest is going forward. As a deobstruent it is useful in visceral obstructions, hysteria, chlorosis; and in that peculiar state of the bowels often accompanying hypochondriasis and dyspepsia, in which there is an almost constant degree of cholic, particularly after taking food, a combination of ammoniac and rhubarb is singularly efficacious. Its dose is from ten to thirty grains. It is given either in substance in pills, or diffused in water in the form of an emulsion. Externally it is applied in the form of plaster to scirrhus tumours, and white swellings of the joints.

AMPUTATION is a term in surgery, and signifies the cutting off a

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limb from the body. It is sometimes rendered necessary when a part is so diseased as either to be wholly useless, or threatening danger if not removed. The cases in which this operation is usually performed, are severe and compound fractures of the bones, attended with splinters; extensive lacerations, and contusions and wounds, with great loss of substance, and pouring forth a profuse discharge; wide-spreading mortifications; white swellings of the joints; cancers, or other incurable and dangerous ulcers, carious and distorted bones, &c. .

As the loss of a limb is at all times a serious calamity, amputation of it should not be hastily, or rashly undertaken; we know a case of a diseased bone of the right arm, which was by a surgeon of some experience recommended to be amputated. The parents of the lad objected to it: and the arm, which the surgeon would have cut off, is now well; the young man is able to write a decent hand with it, and is at this moment a clerk in a merchant's counting house!

Amputation ought never to be undertaken, except by an able and experienced practitioner; of course there is less necessity for our enlarging on this subject. See **TOURNIQUET**.

AMUSEMENTS may be divided into public and private; and they are either active, or of a sedentary nature. The former usually consist of balls, plays, entertainments, &c.; the latter of the various diversions of cards, chess, draughts, back-gammon, and other games of chance, or skill.

Those of an active kind, ought always to be preferred, as they not only relieve the mind, when wearied with application to a particular pursuit, or depressed by grief; but by their agreeable variety, together with the advantages of air, exercise, &c., they are highly conducive to health: on this account they are particularly serviceable to such persons as are subject to nervous, and hypochondriacal complaints, and to all those who lead a confined or sedentary life. Private amusements, on the

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contrary, are principally employed with a view to consume time, and frequently require more application, than either study or business.

Of the amusements of the Theatre, and other spectacles of a similar kind, it is impossible to speak, as they are at present conducted in Great Britain, with approbation; and we really think that, although by a different arrangement, they may be made not only a wholesome mental amusement, but an improving moral one, there can be little doubt that the mischiefs which they produce are very preponderant over any possible good effects which such exhibitions at present occasionally excite.

To cards, and other games of chance, when played for *money*, we are decided enemies. Those persons who cannot be amused by these, without the stimulus of gain, evince at once the weakness of their intellects, and the grossest, and most disgusting attention to self interest. A habit of gambling ought never to be encouraged,—playing games of chance for *money*, invariably encourages such a habit, consequently playing games of chance for money is wrong. Those who have been in the habit of observing card players attentively, are well aware that many a social evening has been spoiled, by the intrusion of these silly expedients to waste time. Surely the intellectual faculties of man ought even to be *amused* by something better than squabbles about the odd trick, or the winning of the honours.

Those amusements which afford the most violent exercise, and ought therefore to be pursued only by the healthy and robust, are cricket-playing, hand-ball, dancing, and similar diversions. When they are undertaken with the necessary adaptation to the strength of the individual, they promote perspiration, and other secretions, expand the lungs, and give firmness and agility to the whole frame.

We purposely avoid recommending hunting and shooting, as in Great Britain these amusements are, in our estimation, whatever their good as

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exercise may produce, highly improper. To hunt or shoot animals for our amusement, is altogether beneath the dignity of rational beings: our wants, necessities, and well being, sometimes compel us to destroy animals: but surely to destroy them for our *sport*, is a high degree of turpitude and immorality. See GAMING and THEATRE.

With respect to the amusements of children, they may be compared to the labour and pursuits of adults. Their influence, as well on health as on the future inclinations and desires of the individual, is much greater, and more permanent, than is generally supposed. Hence we would advise parents and guardians to encourage no games or play-things which have a tendency to impair the constitution, or deprave the morals of their offspring: of this nature are improper and unnatural postures, or gesticulations of the body; wanton jumping up and down high places, forcible exertions of muscular power, by lifting great weights, violent running, or climbing trees; the partial exercise of one arm or leg; sedentary plays of long duration; standing for hours on the legs, musical wind-instruments; toys manufactured by common potters, or made of plaster of Paris; drinking-vessels of lead, pewter, bell-metal, or earthenware imperfectly burnt or glazed; play things coloured or painted with noxious metallic preparations, such as verdigris, orpiment, and red lead, as well as those devices and similar trifles produced by the confectioner, particularly gingerbread, covered with the noxious matter called gilt, or Dutch metal, &c. &c.

ANASARCA, a species of dropsy from a serious humour spread between the skin and flesh, or rather a general accumulation of lymph in the cellular system. See DROPSY.

ANATOMY is the art or science which teaches the situation, figure, connexions, fabric, actions, and uses of the several parts of an animal body, and is applied in a more emphatic sense to the human frame.

As a substantial frame and prop to

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the whole body, the bones are provided; and that their motions might be more complete, they are attached to one another by a kind of hinges called *ligaments*. In order that the ligaments might operate easily, the joints are separated by gristles, or cartilages, and provided with a gland for the secretion of oil or *mucus*, which is constantly exuding into the joints to lubricate them. There are two hundred and forty eight separate bones in the human body, classed under those of the head, the trunk, and the extremities.

The skull, or *cranium*, consists of eight pieces, and serves as a cover and protection to the brain. The bones of the face are fourteen; the teeth are thirty-two; one bone of the tongue; and each ear has four bones.

The head is joined to the trunk by the vertebræ, consisting of several short bones, to the upper part of which it is fastened by a hinge joint, and turned in the socket of the next lower one, by suitable muscles to the right and left.

In the front and centre of the trunk is the breast-bone, *sternum*; and opposite to it, in the back, is the spine or back-bone, which extends from the skull to the bottom of the loins, and is in fact a long chain of separate short bones, in number, twenty-six. Throughout the whole length is a hollow tube, about one inch in diameter, in which is contained the *spinal marrow*, derived from, and immediately communicating with the brain, and conveying the sensation of feeling from every part of the body, except the head, to the brain, the common organ of that faculty.

The ribs, twenty-four in number, and the sternum before mentioned, form, with the back bones, the thorax, in which are contained the heart, lungs, &c., which are separated from the liver, stomach, intestines, &c., by a membrane called the *diaphragm*.

The hip-bones, with other bones attached, supporting the abdomen, are called the *pelvis*.

From the neck to the top of each arm, a bone extends on each side, called the collar bone, *clavicle*; and the two

blade-bones, *scapulæ*, behind, are independent supporters of it.

The bone extending from the shoulder to the elbow, is called *humerus*; from the elbow to the wrist are two bones, the outer of which is the *ulna*, the inner the *radius*. The wrist, *carpus*, is composed of eight bones. The bones of each hand, *metacarpus*, together with the wrist, and fingers, are in number twenty-seven.

The thigh bone is called *femur*; the knee-cap, the *patella*, and the leg has two bones like the arm, the inner is called the *tibia*, and the outer the *fibula*. The bones of each foot are twenty-six.

The bones are covered with a variety of *muscles*, which frequently end in *tendons*, by which the motions of the limbs, and other parts of the body, are guided and used.

The whole body is covered with a membrane, called the cuticula, or *scarf-skin*, beneath which lies the *cutis*, or true skin. The skin which is commonly raised in blisters, is the scarf skin: not possessing any nerves, it is destitute of sensation: but the true skin, which lies immediately beneath it, is so sensible that it cannot be touched, even by the point of a pin, without conveying an immediate sensation to the brain.

The organs of sense, and the powers of the mind, arise in the *brain*, the common centre of all the nerves, which not only convey sensations to that organ, but also direct the muscles and tendons, and, either from the brain direct, or through communication with the spinal marrow, influence, more or less, all the functions of the body.

But the immediate processes of animal life, are sustained by a simple, yet wonderful arrangement in the thorax, the stomach, and other cavities of the body.

The heart, which is situated in the thorax, between the lungs on the left side of the body, and inclosed in a bag or membrane, called *pericardium*, to restrain and regulate its motions, is the centre of numerous tubes called blood-vessels. Those vessels which

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convey the blood from the heart, are called *arteries*; those which return it to the heart, are called *veins*. The blood of the human body, driven by the contraction of the heart, a force similar to that by which water is driven out of a syringe or bladder, is calculated to weigh about thirty pounds; thus there is a constant circulation outward and inward from the heart, through the arteries, and back to the heart by the veins. To warm, revive, nourish it, and keep up its quantity, there are various other wonderful, but very simple contrivances.

The heart consists of four cavities, from one of which, called the *left ventricle*, the blood is driven into the arteries throughout the body; by another, called the *right auricle*, it is received back again by the veins: it then passes into the *right ventricle*, hence it is forced into the lungs. Having been there revived by coming in contact with the air of the atmosphere, it is carried back by veins into the *left auricle*, where it began its course; it is then again forced into the arteries, brought back by the veins, and thus the circulation continues till the end of life.

The lungs are composed of a spongy substance, filling nearly the whole cavity of the chest or thorax, which rises as they fill at every inspiration, and falls as they empty at every expiration; both of which processes are performed, as is well known, through the mouth and nostrils, or either of them, according as we may choose.

The act of respiration is performed about twenty times in a minute; and about forty cubic inches of air are inhaled every time; of which two inches of oxygen are absorbed by the blood on the lungs, producing at the same instant about 98 degrees of vital heat, and restoring the venous blood to that bright red colour which it uniformly possesses, after having passed through the lungs, and is thrown into the arteries from the heart. In this manner the blood distributes nourishment, supplies perspiration, renews the waste of the skin, and by passing through glands

in every part of the body, all the various animal secretions are elaborated. In the parts where the arteries are lost to the sight, the veins take their rise, and in their commencement are imperceptible. The blood is then of a dark colour, and as its motion is considerably slower in the veins than in the arteries, there is generally double the quantity of this vital fluid in the former, than there is in the latter vessels.

The blood is not only altered in its colour and quality, after having passed through the lungs, but as it is returned by the veins to the heart, it receives from the *thoracic duct*, a new fluid extracted from the food in the stomach and intestines, and the addition of this fluid to the blood, as well as its absorption of air from the lungs, seem to be the principal powers by which human, and indeed all animal life, is kept up and supplied.

The motion of the lungs is preserved by that of the chest containing them; that of the heart may be felt on the left side, and the circulation of the blood felt, and its velocity determined, by the action of the pulse, that is, the pulsation of the artery in various parts of the body, and particularly at the wrist.

In children the pulse are sometimes 120 strokes in a minute; at 20 years of age, they are about 75; at 30, about 70; and in old age 50 or 60. But scarcely two persons' pulse are exactly alike.

For the purpose of renewing and nourishing the blood, and of course, through it, the whole body, food is taken in at the mouth, masticated by the teeth, and mixed with the saliva; it is then carried into the stomach, where it is dissolved into a soft pap, by a powerful liquid, called the gastric juice. This pap is then sent from the stomach into the intestines, where, by means of a liquid called bile, it is separated into a white milky liquid called *chyle*, and into the *excrement*. The chyle is taken up, or absorbed by numerous fine tubes, called *lacteals*, which carry it to a main pipe called the *thoracic duct*. This pipe ascends towards the throat, where it empties the chyle into a large vein,

and being mixed with the blood, is conveyed to the heart.

The nerves are soft white cords, which arise from the brain or spinal marrow, and are dispersed in branches through all parts of the body. Impressions are received by the brain from the adjacent organs of sense; the brain also exercises its commands over the muscles and limbs, by means of the nerves.

The *ear* is placed in the most convenient part of the body, near the brain, the common seat of all the sense, to give the speediest information.

The principal organs of the sense of *smelling*, are the nostrils, and olfactory nerves, which are distributed throughout the nostrils.

The *taste* is that sensation which all things give to the tongue, or rather perhaps the palate; the upper part of the roof of the mouth and tongue together, are the instruments of taste.

A very intimate union seems to be established between the *eye*, the nose, and palate, as branches of the same nerves are sent to each of these parts, by which means there exist all the necessary guards against pernicious food; since, before it is admitted into the stomach, it undergoes the trial of two of the senses, and the scrutiny of the eye.

Feeling is the sense by which we acquire ideas of solidity, hardness, heat, cold, pleasure, pain, &c. The immediate organs of feeling are pyramidal papillæ under the skin, which are little soft medullary nervous prominences, lodged every where under the *cuticula*.

The contents of the Abdomen have been already described under that article, which see; See also BLOOD, LIVER, STOMACH, KIDNEYS, &c. &c. in the order of the alphabet throughout the volume

• **ANCHOVY**, or *Clupea encrasicolus*, is a small fish, taken in immense quantities on the coast of the Mediterranean Sea, whence it is brought into Great Britain in a pickled state. It is in general from three to four inches long, has a pointed head, a wide mouth, destitute of teeth, and the gums are uncom-

monly rough. The back-bone is, near the head, and for some space below it, *triangular*, by which it may be easily distinguished from a sprat, whose back-bone is flat.

Anchovies are variously prepared. They are brought chiefly from the Mediterranean, preserved by salt in small barrels. If in this state they are covered with brine, and laid in a cool place, they will keep for any length of time; but if they are exposed to the air, they soon become rancid and spoiled.

They are used as a condiment, and in various sauces, and form a considerable article of trade, but as food they hold a very secondary rank.

The anchovy is occasionally found on the western shores of Great Britain; it is larger than that usually brought from the Mediterranean; but it is not obtained in sufficient quantities to become an article of commerce.

ANCIENT, or DEAD LANGUAGES, are those which are no longer spoken by a living people, such as the Hebrew, Greek, and Latin: they generally form a part of the education of those students who are intended for the learned professions of divinity, law, or physic. The utility of employing so much of the time of children at school in classical pursuits, has been much questioned: the method in which these languages are usually taught, is, beyond dispute, extremely bad. The memory, and not the judgment, is too much exercised, and thus the child's mind becomes, for a series of years, a mere word-book. If, in teaching any language whatever, either dead or living, our professors would condescend to learn, not from books, but from the best of all teachers, the natural habits of the human mind, they will soon discover the true method in which language ought to be taught: in a word, in the same way in which a child acquires his mother tongue: by obtaining, first of all, the names of the commonest and simplest objects, and their connexions, and proceeding gradually, without burthening the memory, to the more complex. Although ancient learn-

ing has, no doubt, been extolled beyond its merits, yet, inasmuch as a knowledge of ancient languages must necessarily furnish us with a fund of words, and some additional ideas, we think that, provided the mode of teaching them were simplified, and we feel assured nothing is more easy, so that less time might be lost in their acquisition, a knowledge of Greek and Latin, if not of Hebrew, must become an ornament to the mind. We should not forget, however, that except in the arts of sculpture, architecture, poetry, and oratory, and, perhaps, historical composition, the ancients are far excelled by the moderns. The chemistry, the astronomy, the philosophy, and the arts of life of the ancients, as far as they have come down to us, are, indeed, of a very inferior kind, and assuredly not worth studying but as mere curiosities.

ANCIENT LEARNING signifies a thorough acquaintance with the writing of the ancients. From what has been said in the preceding article, it will be seen what may be expected from ancient learning. The study of the Hebrew Scriptures, indeed, furnishes a peculiar motive for learning that language, but except those persons who are specifically appointed to the ministry, or a few others, whose taste might lead them into the particular pursuit of Hebrew, we do not apprehend that this language is ever likely to be generally studied.

Illiberal prejudices have long existed, inducing us to give a preference to the ancients for their genius as well as their writings. But we believe these prejudices are now diminishing, and that the ancients are about to be placed in those niches in the temple of fame, to which they are dispassionately and fairly entitled. The mere circumstance of antiquity will no longer be permitted to give precedence to a blockhead; and although a **SOLOON**, an **HOMER**, a **PLATO**, a **CICERO**, a **VIRGIL**, or a **CINCINNATUS**, must still stand on an elevated pedestal, yet a **BACON**, a **LOCKE**, and a **WASHINGTON**, will, in actual

worth and utility to our species, unquestionably obtain the pre-eminence. Certain it is, that those persons who have made the ancient languages exclusively their study, are generally the worst writers of English, and the most incapable of forming a judgment of the manners, literature, opinions, and improvements of the age in which we live.

ANEMONE, or **WIND-FLOWER**, is the name of a plant chiefly distinguished on account of its beautiful flowers, which, by the Greeks, were supposed not to open till the wind blows: whence it has received its original name. Of twenty-one species, the following deserve some notice.

Anemone pratensis, L. The dark-flowered, or meadow anemone, produces beautiful dark violet, or almost black flowers, which blow in March or April, and never expand. In its recent state, the meadow anemone is almost flowerless, although its taste, when chewed, is extremely pungent, and corrodes the tongue and fauces. Chemists have proved, by experiments, that one of its constituent parts is *camphor*, which has been obtained in the form of crystals. Hence it has been successfully employed in the cure of chronic affections of the eyes, especially in *gutta serena*, cataract and opacity of the cornea. The juice of the root, chewed in small quantities, frequently affords sudden relief in excruciating tooth-ache.

The dark violet leaves of this species, boiled with those of the common saw-wort, with a proper addition of alum, afford an excellent green water-colour for landscape and other paintings.

Anemone nemorosa, L. or the wood anemone, is another wild sort, bearing only one white, or sometimes purplish, flower or plant. In medicine, it may be usefully employed as a substitute for cantharides.

ANEURISM is a throbbing tumour, occasioned by the dilatation, or rupture of an artery: it consists of three kinds; the true or encysted, the false or diffused, and the varicose.

The true aneurism, when situated

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near the surface of the body, produces a tumour at first small and circumscribed, but, when pressed by the finger, it manifests a distinct pulsation. By degrees it increases, and becomes more prominent; still, however, the patient does not complain of any pain. As it grows larger, the skin turns more pale than usual, also more swollen, and at length assumes a livid and gangrenous appearance. A bloody serum now oozes through the integuments; the skin cracks in several places; and the artery being deprived of the usual resistance, discharges its blood with such velocity as to occasion almost instantaneous death. Sometimes aneurisms of some of the large vessels in the thorax, burst suddenly, and occasion instant death, although the patient might have been previously in apparent health.

The false aneurism consists of a wound or rupture of an artery, and, by the extravasation of blood, produces a swelling of the contiguous parts.

The varicose aneurism is that which arises from the puncture of an artery, and sometimes happens in blood-letting. This circumstance, it is hoped, will point out the necessity of persons applying to regular practitioners, who are acquainted with the situation of the blood vessels, instead of employing, as is too frequently the case, ignorant and unskilful pretenders, for the performance of this important operation.

The cause which generally produce aneurisms, are a peculiar predisposition of the arteries when they are in a relaxed state; excessive bodily exertions; stooping and lifting great weights, intemperance, &c. When they arise from any external accident, an operation may be attended with success, but in all other cases art can afford but little assistance.

In a complaint, however, of this nature, the earliest application should be made to an able medical practitioner; the disease being always attended with danger, we presume that no inexperienced person will be weak enough to tamper with his own life, or that of a fellow-creature.

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ANGELICA is a plant, of which there are seven species, only one or two of which appear indigenous to this country.

The garden angelica, *angelica archangelica*, is a native of the more northern parts of Europe. The root is biennial, thick, fleshy, and resinous. The stem erect, hollow, smooth, furrowed, and of a purplish hue, rising upwards of five feet in height. It flowers in June and August.

The leaves and seeds, when recent, and the root, both in the fresh and dried state, are tonic and carminative; but although the most elegant aromatics of northern growth, yet they are scarcely ever prescribed in modern practice. The dose, in substance, is from half a drachm to a drachm, three or four times a day.

Angelica roots are used in large quantities by the distillers in flavouring English gin, to which they communicate an agreeable smell and taste, when not overpowered by a more common and cheap ingredient, oil of turpentine.

Cattle are exceedingly fond of eating the fresh leaves of the wild angelica; and bees visit it whilst in flower. Its growth should be encouraged, and even artificially promoted, as it is one of those plants which might be used as a substitute for oak bark in tanning leather; particularly in preparing a kind of morocco from sheep, calf, and goat skins. It is said, also, that a permanent gold colour can be obtained from the leaves.

ANGER may be defined a violent passion of the mind, arising, generally, although not always, from a sense of personal injury, and is attended with an ardent desire of revenge.

Anger is far from being at all times a selfish passion, since it is naturally excited by injuries offered to others, as well as to ourselves, and was probably designed, not only to excite us to act vigorously in defending ourselves from evil, but to interest us in the defence and rescue of the injured and helpless, and to raise us above the fear of the

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proud and mighty oppressor. Hence, therefore, the precept, *Be ye angry and sin not*. Anger becomes sinful, however, and contradicts the rule of Scripture, when it is conceived upon slight and inadequate provocations, when its motives are low and selfish, and when it continues long, it is then contrary to the amiable spirit of charity, which suffereth long, and is not easily provoked. Hence the other precepts, *Let every man be slow to anger; and, Let not the sun go down upon your wrath*.

We ought, as rational agents, to be aware of encouraging the destructive emotions of anger; for it is certain, that men and women possessing an irascible temper, shorten their lives by such continual agitations. Young persons, particularly females, should be informed, that independently of its moral turpitude, anger deforms the face, steals the rose from the cheek of beauty, and not only tends to extinguish the tender affections, but sometimes even produces aversion. We should remember, too, that revenge is at all times wrong, both in principle and practice. See **REVENGE**.

Persons who know themselves liable to the attacks of anger should, by every means in their power, avoid being placed in such situations as will excite it; and upon its approach should, if possible, escape from the object which produces it. But sober and steady habits of reflection are, perhaps, after all, the best antidotes. See **GRIEF**, **PASSION**, **TERROR**, &c.

ANGINA, see **QUINCY**.

ANGINA PECTORIS, an extremely dangerous disease, which seizes those who are subject to it when walking, with a very painful sensation in the breast, threatening immediate suffocation, and often inducing fainting; but the moment the patient stands still all the uneasiness vanishes. A few months from the first attack of the disease, the fits will not cease instantaneously on standing still, and they take place in almost all situations, sitting still, or in bed, as well as when walking

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about. The duration of the paroxysm is uncertain: at first it goes off on being still; it then continues some time after with great palpitation of the heart; and, at length, does not leave the patient for some hours. It frequently happens that persons die soon after the attack of a fit; but it sometimes produces other lingering diseases. The cause of this disease is unknown, although it has been suspected, that ossification of the coronary arteries of the heart, and an accumulation of fat about that organ, the mediastinum, pericardium, and diaphragm, might contribute to it.

In curing this disease, it does not appear that the administration of medicines has been of much avail. Dr. Fothergil's directions are chiefly calculated with a view to prevent it gaining ground, and to alleviate present distress. He recommends such a diet as is most likely to prevent irritability: in particular, not to eat voraciously; to be particularly abstemious in respect to every thing heating; spices, spirits, wines, and all fermented liquors; to guard most scrupulously against passion, or any vehement emotions, and to make use of all the usual means of establishing and preserving general health; to mitigate excesses of irritability by anodynes; or pains, if they increase the circulation of the blood; to disperse flatulencies, when they distend the stomach, by moderate doses of carminatives; amongst which, perhaps, peppermint water may be reckoned the safest: of course, due attention ought to be paid to keeping the bowels regular, or somewhat open. As obesity or fatness is considered a principal disposing cause, it has been recommended to prevent the increase of fat by a vegetable diet, and using every other means of increasing the thinner secretions. Issues in the thighs have, in some cases, had a very good effect, and spontaneous discharges from the piles have been succeeded by an abatement of the disorder.

ANGLING, is one of those *sports* which we cannot commend, although, in a work of this kind, we are com-

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pelled to take notice of it. It is usually defined the art of fishing with a rod, to which are fitted a line, hook, and bait.

The season for this amusement commences about the month of June; and the proper hours are, at the dawn of day, and about three o'clock in the afternoon; at which time, the fish in ponds and small rivers are accustomed to feed. Easterly winds afford but little sport to the angler; those blowing from the south are the most conducive to his purpose; a warm and lowering day, is of all others the most propitious. A cloudy day following a bright moonlight night is always an auspicious omen; as the fish do not love to seek for food in the moonlight, and are therefore always hungry next morning.

Various baits are used; such as worms, artificial flies, paste made of boiled cheese beat up with powdered quick lime, &c.; when these last are employed it will be proper to cement them with a little tow, and rub them over with honey. The best method of using the fly is down the current of the stream; and half a dozen trials will be sufficient to determine, whether the fish will take or refuse the bait.

It should be noticed, that *bream* are to be found in the most quiet places; *eels* under the banks of rivers; *perch* and *roach* in a pure swift stream; *chub* in deep shaded holes; and *trout* in clear rapid brooks. Situations abounding in weeds, or old stumps of trees, often harbour numbers of fish which bite freely; but there is great hazard of breaking the line or entangling the hook. The openings of sluices and mill-dams always invite them up the current, to seek for the food which is conveyed with the stream; and angling in these places is, generally, successful. See FISHING.

ANGUSTURA BARK, the *Cortex Cuspariæ* of the London Pharmacopœia, is obtained from a tree which is a native of South America. It grows abundantly in the woods, near Carony

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and Alta Grœcia; and is an elegant evergreen, rising to the height of from 60 to 80 feet, having a cylindrical trunk covered with a grey-coloured bark. This bark was first imported from Dominica in 1778, but the travels of Humbolt have led to the real place of its growth. The odour of this bark is not strong, but peculiar; the taste bitter, slightly aromatic and permanent, leaving a sense of heat and pungency in the throat.

Angustura or Cusparia bark is stimulant and tonic; it does not oppress the stomach, but gives to it a degree of warmth; expels flatus, keeps the bowels open, and increases the appetite for food. It is said to be particularly efficacious in bilious diarrhœa and dysentery, after due evacuations; and that it proves useful in dyspepsia, hysteria, leucorrhœa, and most of the diseases in which tonics are indicated. It has been also asserted, that it is of service in intermittents, but some medical practitioners dispute its value in this respect.

It may be exhibited in substance, in watery infusion, in tincture, and in the form of watery extract. The powdered bark is given in doses, from five grains to twenty, beyond which it is apt to induce nausea. Of the aqueous extract, ten grains is a full dose. In large doses all the forms are apt to excite nausea.

The history of the introduction of this article into the *materia medica*, with which we happen to be intimately acquainted, would furnish matter of surprise and profound reflection for many of our readers. When medical men become *trading druggists*, there is no calculating to what extent their cupidity may prompt them.

ANIMAL, in natural history, signifies an organized living body, capable of voluntary motion, and endowed with sensation.

The most powerful instinct of animals is *self-preservation*, and the propagation of the species: in order to promote the purposes for which they are

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reated, both nature and art afford various and singular expedients. In this place, however, we cannot enter into the particulars which will be treated of, under the different heads of APPETITE, NOURISHMENT, SLEEP, &c.

With respect to the divisions of animals into different classes, we may refer to the article ANIMAL KINGDOM.

ANIMALCULE in its general acceptation, merely signifies a little animal, but is usually applied to those living objects, which are invisible to the naked eye, and can be discoverable only by the assistance of glasses.

By the invention of the microscope, we have become acquainted with a variety of animals, which, from their minuteness, would otherwise have escaped our observation; and there is reason to believe, that myriads of them exist, both in the atmosphere and on the earth, which elude the human eye, even when assisted by this instrument. They are of various kinds, and to be met with in different bodies. By the assistance of magnifying glasses they may be seen in water, vinegar, beer, milk, &c. They are also found in corn, paste, flour, and other farinaceous substances: they have been found in the human semen, and also in that of the lower animals: some philosophers, however, deny the truth of this last assertion.

It is said that great numbers of animalcules have been found in the whitish matter that adheres between the human teeth; but they have hitherto not been discovered, either in the blood, saliva, urine, bile, or chyle. They have also been found in putrefied animal substances, and are supposed by some to produce many diseases, such as the plague, typhus, &c. The small pox, measles, and other cutaneous eruptions, are also, by many, conjectured to owe their origin to this source. But our knowledge is at present too limited to speak with accuracy upon this subject. See GENERATION and MICROSCOPE.

ANIMAL-FLOWER, *actinia sociata*, from its supposed property of stinging, was formerly called Sea-Nettle, or Sea-Anemone, but, by late writers, has

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received its present name. It is of a tender fleshy substance, which consists of many tubular bodies, gently swelling towards the upper part, and terminating like a bulb or very small onion: its only orifice is in the centre of the uppermost part, surrounded with rows of tentacles or claws, which, when contracted, appear like circles of beads. It assumes various forms, and when the tentacles are fully expanded, has the appearance of a full-blown flower. Its known species are thirty-six, many of which are eatable. It is said to possess, in an extraordinary degree, the power of reproduction, so that to multiply it at pleasure, nothing more is necessary than to cut a single one into several pieces.

ANIMAL-FOOD. See FOOD.

ANIMAL-KINGDOM, an expression which includes all organized living bodies capable of sensation and voluntary motion; and essentially differing from plants and minerals, which have neither organs of sense nor the power of loco-motion.

Other circumstances afford a criterion to distinguish animals from vegetables and fossils; which in many instances so closely border on each other, especially the two former, that naturalists have frequently hesitated to which of these kingdoms certain marine productions, the polypus for instance, may be with the greatest propriety referred. See VEGETABLE and MINERAL-KINGDOMS.—All bodies which grow *from without*, that is, derive their origin and increase in such manner as to approximate to themselves certain foreign and inert particles, and are incapable of motion, consequently inanimate, are called *minerals*. Bodies having no aggregate form, but growing *from within*, being provided with certain tubes or vessels adapted to the circulation of fluids, which afford them nourishment and promote their extension, may be said to enjoy a passive life, and are therefore termed *vegetables* or plants. Living creatures, which likewise grow *from within*, and are endowed not only with those vessels, but also with organs of sense, the faculty of loco-motion, and the power of distinguish-

ing one external object from another, yet do not enjoy the advantages of reason, at least in the superior way which man does, are generally denominated *animals*. Hence arise the three divisions of natural bodies consisting of the **ANIMAL**, **VEGETABLE**, and **MINERAL KINGDOMS**.

The animal kingdom has been subdivided as follows: *Mammillary-animals—Birds—Amphibious-animals—Fishes—Insects*, and *Worms*. We shall give a more or less detailed account of the different domestic and wild animals, according to their importance, under their various names, in the progress of our work, to which we refer.

ANIMAL-LIFE is that organization which distinguishes animals from vegetables, and is susceptible of sensation and reflection. Various conjectures have, at different periods, and by eminent philosophers, been held respecting the nature and origin of this important principle, but it still remains involved in obscurity. From some late experiments of Dr. URE on the body of a criminal executed at Glasgow, there is strong ground for concluding that galvanism or electricity is an important agent in animal life. Without, however, investigating any theory, it will be sufficient to state the leading circumstances which accompany the progress to animation.

Heat is a material agent in the production and continuation of life; as is beautifully illustrated in the hatching of an egg. The progress of which towards maturity is nearly as follows:—on the first day no perceptible alteration takes place; on the second, the treadle changes to a pale yellow colour; and every following day it becomes yellower, till at length it grows red, and afterwards of a deep blood-colour, which soon thickens to a firmer substance; this speedily assumes a form, when it thickens into life, is nourished by the yolk, and laid in the white as in a bed provided for its accommodation; thus it continues increasing till it grows too large for its narrow bounds, when it bursts the walls of its prison and comes forth a perfect animal.

ANIMAL-MOTION. Various conjectures have been broached with a view to account for the origin of this important function in the animal economy; and anatomists have, in their dissections, demonstrated that the contraction of the muscles causes motion, but by what peculiar process, or how produced, remains still doubtful and involved in obscurity. Like most other springs of action arising from a *first cause*, it is only in a slight degree cognizable to our senses by its evident effects. See **MUSCLES**.

ANIMAL-ECONOMY implies in its most extended sense not only the general arrangement of the parts, and the dependence of one part upon another of the animal functions, but also a knowledge of the structure and uses of the different parts of all animals; but it is here intended to signify only such a view of the human system as may afford the means of preserving health and promoting the useful purposes of life.

The enjoyment of a sound mind in a healthy body being the greatest of earthly blessings, a portion of the time and industry of every rational being ought to be employed in the acquisition of so desirable a state. For this purpose nothing is more essential than a proper knowledge of the various branches of animal economy, by the assistance of which we are not only enabled to preserve ourselves in perfect health, but to remove, and frequently to obviate, the attack of many disorders to which we are liable, and which from our ignorance and mismanagement, might otherwise be productive of the most fatal consequences.

The study of the animal economy ought therefore to form a part of every one's education.

It is not however necessary, nor is it convenient, that every person should be minutely instructed in the more abstract branches of medical or anatomical science; but an acquaintance with such familiar and practical parts as are of general use and application, should certainly be inculcated. Hence we

have in this work introduced several articles, such as **ANATOMY**, **ABDOMEN**, &c. which we hope will prove popularly useful, and convey to the general reader beneficial information.

ANIMAL-POISONS are those poisons occasioned by the bite of venomous animals, as the *riper*, *rattle-snake*, &c. by the sting of *bees*, *wasps*, &c. by poisonous animal food taken into the stomach, or by the bite of a rabid animal, such as a *dog*, *cat*, &c. We shall treat of these more at large under their respective heads, or generally under the article **POISON**, to which we refer : see also **HYDROPHOBIA**.

ANIMAL-SPIRITS, are supposed to consist of a fine and subtle fluid secreted in the cortical substance of the brain and spinal marrow, which passes through the medullary part, and is conveyed through the cavity of the nerves to every part of the body. But although the existence of such invisible agents has been maintained by some celebrated physicians, yet we think that the sedate and scrutinizing philosophers of the nineteenth century must be content, for the present at least, to consider such beings as non-existent.

ANIMATION is that property which distinguishes living from dead, or inanimate matter, and is frequently used to denote the principle of life itself; strictly speaking, however, it is that which imparts energy and activity to the vital powers; as these may still continue when animation is either suspended or destroyed. It is capable of modification, and varies in its proportion at particular times, and in different persons.

In a moral or intellectual sense, it denotes an elevated state of the mind, in consequence of the predominance of some powerful passion, such as love, anger, ambition, &c.; or the application of some stimulant, such as wine, spirits, air, exercise, &c.

Of those causes which produce it in the highest degree, the chief and most essential is *air*; given either in its purest state, or in certain combinations with other gases, its effects are so singular as to resemble those which were former-

ly said to be produced by magic. Sir **HUMPHRY DAVY**, in a work published some time since, informs us, that after inhaling *nitrous oxyd*, a gas till then considered as irrespirable, several persons as well as himself, generally exhibited symptoms of the highest animation : an indescribable transport, with an irresistible inclination to laugh, were among the effects which it produced:

Animation may be either diminished or suspended without injuring or destroying the living principle. The former effect may be seen in those persons who have suffered from long and close confinement in prisons, hospitals, crowded and heated assemblies, as well as in fevers, consumptions, and other chronic complaints. In these cases a proper and moderate application of the necessary stimulants, such as air, exercise, a nourishing diet, &c., will generally accomplish either its partial or complete restoration. Of the latter, various instances have lately occurred : persons who were accidentally suffocated or drowned, have by timely and proper means, particularly those recommended by the Humane Society, been successfully reanimated when life itself seemed totally extinct.—See **DROWNING**, **SUSPENSION BY THE CORD**, **LIGHTNING**, &c.

Among those causes which principally tend to preserve and increase animation, are temperance, exercise, nourishing diet, wine, moderate gratifications, and constant activity, both mental and corporeal.

ANISE, or *Pimpinella*, is an annual plant, a native of Egypt; but cultivated abundantly in Malta and Spain, and in our physical herb gardens; it flowers in July. It is a delicate plant, and rises about one foot only in height. The stem is striated, smooth, jointed, and branching; the lower leaves are roundish, lobed, and toothed; but the upper ones are divided into narrow pinnated segments: the flowers are small and white, in flat terminal umbels without involucre: the seeds are oblong, swelling, and of a greenish colour.

The anise grown in this country ripens its seed sufficiently to be gathered about

the middle of August. A considerable quantity is cultivated at Mitcham, in Surrey, chiefly for the use of the rectifiers of British spirits. A greater quantity of seed, however, than is grown here, is annually imported from Malta and Spain; and an inferior sort from Germany. The Spanish is small, usually called *Alicant* aniseed, and is generally preferred.

Anise seeds have an aromatic odour, and a sweetish, warm, grateful taste. Both spirits of wine, and water, extract their virtues; and in distillation with water, they yield a yellowish oil, which concretes at a temperature of 50° of Fahrenheit. An oil of a greenish colour can also be obtained from anise seed by expression; it consists of a hard, fixed, inodorous oil, mixed with a large portion of the proper essential oil.

Anise seeds are carminative: and are supposed to possess the power of promoting the secretion of milk. They are chiefly used in flatulencies, and in the griping of the bowels, to which children are frequently subject. They are given in substance, bruised, in doses from ten grains to two drachms. Anise seeds are often used as a medicine for horses and cattle. They are also ingredients in many of our popular quack medicines, particularly Daffy's Elixir, and Godfrey's Cordial.

The essential oil is used chiefly, also, as a carminative, and is less pungent than many of the other volatile oils. It is given in doses of from five to fifteen drops, rubbed with sugar.

ANNATTO, or **ANOTTA**, in dyeing, is a kind of red colour, formed from the pellicles, or pulp of the seeds of the *bixa*, a tree common in South America. It is brought into England in round rolls about four or five inches long, and somewhat less than an inch in diameter. It is also, sometimes, imported enveloped in flags, whence it is called *flag-annatto*. It is used for imparting to wool, silk, and cotton, a deep orange colour, and to dye the colour of Nankin. It is also used in considerable quantities for colouring cheese: but although the foreign Annatto is sometimes employed

for the latter purpose, an article is now more commonly sold to the farmers, prepared in this country in the form of cakes, by persons who make it their particular business so to do: these cakes are usually made up of flag annatto, turmeric, an alkaline salt, and some common colouring earth, such as Venetian red, or Spanish brown. It is to be regretted that the farmers should be tempted to introduce such colouring matter into their cheese; for, to say the least of it, it is wholly useless.

Annatto is also used, occasionally, as an ingredient in varnishes for communicating an orange shade to the simple yellow.

ANNEALING, by artificers called *nealing*, is a process used in manufacturing different articles from the metals, in order to render them more malleable and tractable; and in the article of glass to render it less liable to break. By the process of annealing, glass is preserved for some time in a state approaching to fluidity; the heat increases the bulk of the crystallized part, and renders it so soft, that the internal particles have an opportunity of expanding and forming a regular crystallization.

A similar process is now used for rendering kettles, and other vessels of cast iron, less brittle. The greater number of metals diminish in bulk, when they pass from a fluid to a solid state. Iron, on the contrary, expands.

ANNUITY is a term applied to any periodical income arising from money lent, or from houses, lands, premiums, salaries, pensions, &c. payable from time to time, either yearly, half-yearly, or quarterly; and to continue for a certain number of years, for life, or for ever.

An annuity is called an *arrear*, when it continues unpaid after it becomes due; and it is said to be in *reversion*, when the purchaser, upon paying the price, does not immediately enter upon possession: the annuity not commencing till some time after.

The interest upon annuities may be computed either in the simple or compound manner. But the latter being most equitable, is generally preferred.

ANNUITY

In the first class, viz. in those which extend for a limited period, the principal considerations are the annuity, rate, and time given to find the amount, or sum of yearly payments, and interest. These are readily ascertained by a series of algebraical calculations.

In freehold estates, the principal circumstances to be attended to are, 1. The annuity, or yearly rent. 2. The price or present value; and, 3. the rate of interest, "

The value of life is determined by

comparative observations, and calculations derived from the bills of mortality. Several computations have been made for this purpose.

Dr. HALLEY fixed upon Breslaw, being a central place, and not much crowded, when he composed his table. He selected 1000 persons, all born in one year, and observed how many of these remained alive every year from their birth to the extinction of the last; and, consequently, ascertained the number which died in each year as follows :

Age.	Persons living.	Age.	Persons living.	Age.	Persons living.	Age.	Persons living.
1	1000	24	573	47	377	70	142
2	855	25	567	48	367	71	131
3	798	26	560	49	357	72	120
4	760	27	553	50	346	73	109
5	732	28	546	51	335	74	98
6	710	29	539	52	324	75	88
7	692	30	531	53	313	76	78
8	680	31	523	54	302	77	68
9	670	32	515	55	292	78	58
10	661	33	507	56	282	79	49
11	653	34	499	57	272	80	41
12	646	35	490	58	262	81	34
13	640	36	481	59	252	82	28
14	634	37	472	60	242	83	23
15	628	38	463	61	232	84	20
16	622	39	454	62	222	85	15
17	616	40	445	63	212	86	11
18	610	41	436	64	202	87	8
19	604	42	427	65	192	88	5
20	598	43	417	66	182	89	3
21	592	44	407	67	172	90	1
22	586	45	397	68	162	91	0
23	579	46*	387	69	152		

As there is allowed to be a greater disparity between births and burials in the city of London than in any other place, Mr. SIMPSON selected 1,280 persons all born in the same year, and re-

corus the number remaining alive each year till none be left, in order to form a table particularly suited to this populous city: it is as follows :

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Age.	Persons living.	Age.	Persons living.	Age.	Persons living.	Age.	Persons living.
0	1280	24	434	48	220	72	59
1	870	25	426	49	212	73	54
2	700	26	418	50	204	74	49
3	635	27	410	51	196	75	45
4	600	28	402	52	188	76	41
5	580	29	394	53	180	77	38
6	561	30	385	54	172	78	35
7	551	31	376	55	165	79	32
8	541	32	367	56	158	80	29
9	532	33	358	57	151	81	26
10	524	34	349	58	144	82	23
11	517	35	340	59	137	83	20
12	510	36	331	60	130	84	17
13	504	37	322	61	123	85	14
14	498	38	313	62	117	86	12
15	492	39	304	63	111	87	10
16	486	40	294	64	105	88	8
17	480	41	284	65	99	89	6
18	474	42	274	66	93	90	5
19	468	43	264	67	87	91	4
20	462	44	255	68	81	92	3
21	455	45	246	69	75	93	2
22	448	46	237	70	69	94	1
23	441	47	228	71	64	95	0

But these tables, however perfect they may be in themselves, must be considered only as probable conjectures, founded on the usual period of human life, which is estimated as follows :

The probability that a person of a given age may live a certain number of years, is measured by the proportion which the number of persons living at the proposed age, bears to the difference between the said number, and that of persons existing at the given ages. Thus, if it be required to know what chance a person of 40 years of age, may have to live seven years longer, the reader should refer to Dr. HALLEY's table, and from 445, the number of persons living at 40 years of age, subtract the number of persons living at 47 years of age, and the remainder, being 68, will be the number of those who have

died during those seven years. The probability, that the person in question will live those seven years, is in the proportion of 377, to 68 ; or nearly as 5½ to 1. By Mr. Simpson's table, the chance is somewhat less than 4 to 1.

If it be desirable to ascertain the year which a person of a given age has an equal chance of attaining, the inquirer ought to find half the number of persons living at the given age in the tables, and the year required will appear in the column of ages.

The premium of insurance upon lives may also, in some degree, be regulated by these tables, as follows :

The chance which a person of 25 years, has to live another year is, by Dr. HALLEY's table as 80 to 1 ; but the chance that a person of 50 years has to live a year longer is only 30 to 1 ;

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and consequently the premium for insuring the former ought to be the premium for insuring the latter for one year, as 30 to 80, or as 3 to 8.

Life-annuities are commonly bought or sold at a certain number of years' purchase. The value of an annuity of one pound for an age of 50 years, at 3 per cent. interest, is about 12*l.* 10*s.* or twelve and a half years' purchase.

ANODYNE is a term applied to medicines which have a tendency to assuage pain. The various articles of the *materia medica*, commonly arranged under the heads Narcotics, Hypnotics, Opiates, Purgatives, Soporifics, &c., are, almost all of them, Anodynes. We shall have occasion to speak more at large on these different heads, as we proceed in our work, to which we refer.

ANT, or *Formica*, in zoology, is a genus of insects belonging to the sixth class of the animal kingdom. The characters of this insect are, that there is a small scale between the breast and belly; and the joint is so deep, that the animal appears as if it were almost cut through the body. The females and the neuters, or working ants, which have no sexual characteristics, are furnished with a secret sting; and both the males and females have wings, but the neuters have none. There are eighteen species, which are in general distinguished by their colours.

A variety of methods have been recommended for destroying these troublesome insects: few of which have the sanction of experience. The best, however, appears to be the following. One of the most simple methods is to pour boiling water into the apertures of their hillocks: for as many ants as are touched by the water, are sure to be destroyed.

It is said that by mixing soot with cold water, and pouring it at the roots of trees infested by them, they will speedily be destroyed. Drawing a ring of chalk about an inch or two in breadth around a tree which they are accustomed to visit, will sometimes prevent them from ascending it: but the chalk should be laid on in dry weather, and frequently renewed. The small garden ants

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may be destroyed by placing amongst them a number of the large ants found in woods, commonly called *horse-ants*; as there is said to prevail between these two species so strong an antipathy, that the larger sort attack the smaller, and never relinquish the combat till they have extirpated, or driven their antagonists from the neighbourhood. The walls of a hot-house have been completely cleared, both from ants and red spiders, by washing them with a painter's brush dipped in a solution made of four ounces of corrosive sublimate in two gallons of water. A small quantity of human feces, placed in an ant-hill, is said not only to destroy great numbers, but to expel the rest from their habitations.

To prevent them from traversing walls and injuring fruit, Mr. FORSYTH directs a hole to be drilled in the ground, with a sharp-pointed wooden stake, or with an iron crow, close to the side of the wall, and at such a depth as the soil will permit. The sides of the hole are then to be made smooth, so that the ants on approaching the edge of it may fall in, and be unable to climb upwards. When a considerable number is collected at the bottom of the cavity, water is to be poured on them, and thus thousands may be drowned. The holes must be made numerous in proportion to the length of the wall. A mixture of soot and quick-lime will destroy great numbers. A little pulverized STAVESACK, is also very useful if scattered on the ground around the stems of the trees. A lump of quick-lime placed in the midst of an ant-hill, and water be poured over it sufficient for slacking it, will, it is asserted, most certainly destroy them. The burning effect of the lime will be greater if a mixture of soap-suds and urine be substituted for water.

Chemists have obtained an acid from ants, *formic acid*, which, when rectified and concentrated, has a penetrating smell, and is corrosive; its taste is so agreeable, when greatly diluted with water, that it has been proposed to be used instead of vinegar.

ANT-HILLS are so well known

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that they require no particular description here. As they are very injurious to both pasture and meadow land, it is a part of the business of the husbandman to extirpate them, and prevent their accumulation. The manner of reducing them, simply consists in taking off the turf, and then digging deep enough to take out all the core, or nest below, and scattering it in various directions about the field, so that when the turf is replaced it may be somewhat lower than the level of the rest of the land; thus the place will be more wet, and the ants prevented from returning to their former situation. This kind of work is usually performed in the early part of the spring, and, perhaps, if it were performed while the season is still frosty, it would contribute more effectually to the destruction of the ants. In some parts of England a particular spade is used for the purpose; but we do not believe that the form of the tool is of much importance; it should, of course, cut keen, and not be very wide or unwieldy.

ANTICOR is a disease to which horses are sometimes liable, which appears to be but little known in this country, and has been so variously described that the name seems to have been applied to different diseases. It is, however, a dangerous complaint, arising from redundancy, or inflammation of the blood, and is known by a swelling in the breast just opposite to the heart, whence the word Anticor (*anticœur*) is derived. Before the swelling appears the horse groans, hangs down his head, and refuses his food; if the swelling ascend to the throat it is present death. In the treatment of Anticor it seems agreed that the horse should be bled freely, and if he happen to be costive, a glyster should be administered to him. When the symptoms begin to abate, a purgative is generally administered. Ripening cataplasms, made of linseed-meal, fenugreek powder, &c. may be applied to the swelling. A French writer on this disease recommends a broomstick to be put under the horse's belly, which two men must

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hold at the ends, and rub it backward and forward *very hard*.

ANTIDOTES are medicines which prevent or cure the effects of deleterious or poisonous substances, either taken into the stomach, or externally applied to the human body. As it will be inconvenient to extend this article with any advantage to the reader, we refer him principally to the articles POISON, ALKALIES, ARSENIC, CORROSIVE SUBLIMATE, OPIUM, VITRIFIC ACID, &c. &c. in the order of the alphabet.

ANTIMONY is a heavy, brittle, semi-metal, composed of long bright streaks, resembling needles of a dark lead colour, and without taste or smell. It is found in Germany, France, and also in England; but that produced in this country is the least proper for medicinal uses, being frequently mixed with a portion of lead. This mineral, when analyzed, is found to consist of a metal united to common sulphur. It is the basis of many preparations, to which we refer in the order of the alphabet.

Crude antimony was employed by the ancients in eye-water, for inflammations of the eyes, and for staining the eyebrows black. It was not used as an internal remedy till the conclusion of the fifteenth century, as it was generally supposed to be poisonous. The sulphuret, or crude antimony, is not very often given internally at the present time, but a variety of preparations from it, have obtained great and deserved celebrity. The sulphuret has been given in gouty and rheumatic affections, scrofula, and in chronic cutaneous eruptions. It produces perspiration, and sometimes in large doses nausea and vomiting are excited. The dose may be from ten grains to two drachms, or more if the stomach can bear it.

In farriery the prepared sulphuret of antimony is frequently administered; and is considered a good alterative medicine; it is also commonly employed in the diseases named Surfeit and Hidebound. It is often given merely to improve the horse's appearance, by giving him a fine glossy coat; it is generally recommended also for those dis-

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eases of the skin which cause a horse to rub himself against the stall, &c. The common dose is about an ounce ; it may, however, be given in larger doses with safety.

Antimonials are principally employed for the cure of febrile and inflammatory diseases when the excitement is great ; but in the latter stage of fever, when much debility prevails, their use is attended with mischief, more particularly in old persons. See the NEXT ARTICLES, JAMES'S POWDER, EMETIC TARTAR, LIVER OF ANTIMONY, MURIATE OF ANTIMONY, &c.

ANTIMONIAL POWDER is prepared from equal parts of sulphuret of antimony and hartshorn shavings, by throwing them into a wide iron pot heated to redness, and afterwards calcining the grey matter for two hours in white lead in a covered crucible. It is of a full white colour, not soluble in water, and only partially soluble in acids. This powder operates as a diaphoretic, alterative, emetic, or purgative, according to the extent of the dose, and state or habit of the patient to whom it is administered. It is the preparation of antimony most commonly employed in the commencement of fevers, and in inflammatory affections, being generally given to produce perspiration ; for it sometimes happens, that when a copious determination to the skin is early induced, after having previously evacuated the stomach and bowels, that fevers of the most threatening aspect are cut short by it. But it appears that in fevers of the typhoid character its use does not promise advantage. Its dose is, commonly, from three to eight grains, or sometimes more, repeated every fourth hour, drinking freely at intervals of warm diluents, until its effects are obtained. This preparation was first introduced by the London College of Physicians into their Dispensary, in the year 1788, as a succedaneum for the celebrated powder of DR. JAMES, and, except that it must be given in larger doses than that medicine, we believe that it is equally efficacious. Mr. Chenevix has pro-

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posed another mode of preparing this powder, but as it has not generally obtained the sanction of physicians we omit it. See JAMES'S POWDER.

ANTIMONIAL WINE, or, as it is now called by the London College, **SOLUTION OF TARTARIZED ANTIMONY**, is diaphoretic or emetic, according to the extent of the dose. In doses of from ten drops to a drachm, in any proper vehicle, repeated every three or four hours, it usually excites perspiration, and is given with this view in the same complaints as tartarized antimony or emetic tartar ; but it is principally used as an emetic for infants, a tea spoonful being given every five minutes until vomiting be excited. It may also be used as an emetic for grown persons, in doses of from one ounce to two ounces or more ; two ounces of this wine containing four grains of emetic tartar. See EMETIC TARTAR.

ANTIPATHY, in physiology, is used to express the natural aversion which an animated or sensitive being feels at the real or ideal presence of any particular object. Such are the reciprocal hostilities said to subsist between the toad and the weasel ; between sheep and wolves ; the aversion of particular persons against cats, mice, spiders, &c.

Antipathies relative to *food* are by no means to be disregarded : it is true, that in children excessive indulgence sometimes increases our natural antipathies, but to *force* children, or other persons, to eat that to which they have a violent dislike, is at all times wrong, and evinces at once, an unfeeling and tyrannical disposition. Nature has implanted in us these antipathies for wise ends, and they must not be overlooked.

Mental antipathies in general arise from a contemplation of objects conceived to be dangerous, from a terror of imaginary disasters ; from a squeamish delicacy ; and from a rooted dislike of things believed to be detrimental. The antipathies of children are to be conquered by teaching them the means of defence and security, and the methods of avoiding noxious agents ;

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so that, when age has expanded the judgment, by demonstrating to them the nature and properties of those natural bodies or phenomena which they fear, they will thus gradually overcome their early prejudices and antipathies. See SYMPATHY.

ANTIQUITIES is a term signifying all testimonies, or authentic accounts, which have come down to us of ancient nations.

The study of antiquities forms a very extensive science, including an historical survey of the ancient edifices, magistrates, offices, dress, manners, customs, ceremonies, religious institutions, &c. of the various nations of the earth; and is useful and interesting to the lawyer, the physician, the divine, and indeed to every person who is desirous of knowing how men thought and acted in former ages of the world.

ANTISCORBUTICS are those medicines and applications which are found useful in the cure of scurvy. To this class belong oxygenous gas, acids, vegetables, bark, &c.

ANTISEPTICS are those medicines which possess a power of preventing animal substances from passing into a state of putrefaction, and of obviating putrefaction when already begun. This class of medicines comprehends four orders: the first is tonic antiseptics, as the peruvian bark, angustura bark, cammomile flowers, &c., which are suited for every condition of body, and are, in general, preferable to other antiseptics, for those with relaxed habits. The second, cooling antiseptics, as acids, which are principally adapted for the young, vigorous, and plethoric. The third kind are stimulating, as wine, alcohol, brandy, &c.; these are best adapted for the old and debilitated. The fourth are antispasmodic antiseptics, as camphor, assafetida, &c., which are to be selected for irritable and hysterical habits.

Numerous trials have confirmed the antiseptic properties of the volatile alkali, as well as most of the fixed salts, although they appear to be inferior to some resinous substances and other

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vegetables. Thus myrrh, in a watery menstruum, has been found twelve times more antiseptic than common salt. Two grains of camphor was a better preservative of flesh than sixty grains of the same salt. An infusion of a few grains of powdered Virginian snake-root, exceeded, in antiseptic property, twelve times its weight of cammomile flowers, and the peruvian bark possesses nearly the same extraordinary quality.

Antiseptics are prescribed in all putrid and malignant diseases, although not without proper precaution as to the time for their exhibition, and different states of the disease. Thus for instance, bark is a specific in mortifications or gangrene, when the vessels are relaxed, and the blood disposed to putrefy, but it will be unavailing when the intestinal canal is obstructed, or if there prevail a preternatural extension and fulness. In cases where astringent antiseptics cannot be employed with safety, contrayerva, snake-root, camphor, &c. may be used as excellent substitutes. See PUTREFACTION.

ANTISPASMODICS are medicines which possess the power of allaying inordinate motions in the system, particularly those involuntary contractions which take place in muscles naturally subject to the command of the will; such as cramps, spasms, or convulsions. Some of the principal antispasmodics are the following: the volatile alkali, essential oils, æther, camphor, musk, opium, &c.

ANUS, the fundament, the termination of the intestines through which the fæces pass from the body. It is also the name of a small opening of the third ventricle of the brain which leads to the fourth.

ANXIETY, is that state of the mind in which it is uneasy about some future event, either from apprehension of danger, or from a solicitude of being relieved from suspense.

When the body is constantly, or for some period, affected by an excess of sensation, the consequences, particularly in irritable dispositions, are fre-

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quently serious and sometimes incurable.

A state of anxiety is often more injurious to the health, both of the body and mind, than the absolute certainty of the evil, about which the anxious state of feeling is engaged. It is not, perhaps, quite easy to account for this fact; but it arises principally, we apprehend, from the effects of the imagination. Evil, in prospect, is frequently greater than the reality when it comes; and the mind, in a state of anxiety, is prone to forbode the worst:—Besides the continued irritation between hopes on the one hand, and fears on the other, produces, we know, one of the most painful states of mind which can be conceived: hence the effects of anxiety on bodily health.

The best remedy, perhaps, for obviating the causes of anxiety in a healthy state of the body is, the following: when persons of a settled age are too anxious in all their expectations and undertakings, it will be necessary to enlighten their contracted minds, by teaching them to form a proper estimate of those things which, in a moral point of view, are of little consequence to human happiness. Thus instructed, they will learn more reasonably to appreciate their own merits, and by comparing these with the frequent failure of success in others, who have excelled them in virtuous as well as in useful deeds, they will gradually be enabled to reduce their own expectations to a proper standard.

For those states of anxiety arising from excess of feeling at those crises in the affairs of mankind, such as the expected death of dear and valued friends, or children; the prospective transition from affluence to poverty, and a variety of other situations, which invariably produce a high degree of mental, and in the end frequently bodily disease, we can only recommend a cultivation of the philosophical truths that *nothing is stable in this world*,—that every thing here is constantly liable to change; and that no permanent happiness ever will be found on the

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earth; that, however, all things will be, under the guidance of a supreme intelligence, ultimately *for the best*; and that anxiety, and the affliction accompanying it, should, and will teach us humility, kind-heartedness, and love; and also, that we should cultivate a patient acquiescence in the progress of those events, the pressure of which we may, by a proper mental discipline, very much alleviate, although it is out of our power, either wholly to remove or cure.

Where the appetite is bad, and digestion impaired by anxiety, that food is to be chosen which is calculated to restore the diminished functions. A moderate use of cordials and generous living, therefore, should be adopted. Malt and, in general, all fermented liquors should be avoided. See **ALIMENT AND APPETITE**.

APE, in zoology, an animal of which we find more than fifty species: it is more remarkable on account of its peculiar bodily structure, and habits of life, than from either its dangerous or useful tendencies.

Apes do not appear to possess so much sagacity in many respects as some other animals, yet, in consequence of their shape, and their imitative qualities, they are usually ranked by naturalists in the next place to man.

Besides making good use of their teeth and nails, apes defend themselves with branches of trees, stones, and the like. Their maternal affection is so great that they frequently smother the dearest of their offspring, and hence it has been proverbially applied to mothers who spoil their children by excessive indulgence in the articles of food and drink.

APERIENTS, in medicine, signify those substances which possess a gentle purgative quality, and facilitate the circulation of the fluids by removing obstructions. See **LAXATIVES**.

Aphis. See **PLANT-LOUSE**.

APHORISM, a maxim, general rule, or principle of a science; or a brief sentence, comprehending a great deal of matter in a few words.

It would be highly conducive to the progress of knowledge, if all elementary works were written in an aphoristic form, so that every detached fact, or assertion, might be reduced to a distinct proposition: the memory would by these means be less burthened, and the principles more readily and easily conveyed to the mind. In some instances, in this country, this plan has been adopted with success.

Aphthæ. See THRUSH.

Apiary. See BEE.

APOPLEXY is a disease in which the patient is suddenly deprived of sensation, and incapable of voluntary motion. It is usually divided into two kinds, the *sanguineous*, and the *serous*. The symptoms which distinguish the former, are a sound sleep preceded by giddiness, and attended with snorting, noise in the ears, convulsions, or flashings before the eyes, and redness of the face. If any thing be put into the mouth, it is immediately returned through the nose; nor can it be swallowed, unless the nostrils be closed, in which case, there is danger of suffocation. In many instances it proves fatal on the first attack; and few survive a repetition of the fit. If the patient appear insensible, there is but little hope of his recovery. Those who apparently recover, are frequently carried off without being warned of its approach.

The best method of treatment, consists in placing the body in an erect posture, and supporting the head in that situation; in copious and repeated bleedings from the jugular veins, and temporal arteries, cupping, and the application of blisters to the head, or between the shoulders.

In the *serous* apoplexy, the pulse is weak, the face pale, and there is a diminution of the natural heat. This species is equally fatal with the other, and may arise from any thing which induces a debilitated state of the body, such as depressing passions of the mind, much study, long watching, &c. It may also be brought on by too plentiful a use of diluting acidulated drinks. In this

species, bleeding cannot be attempted with safety: acrid purgatives, emetics, and stimulating clysters, have been employed with a view to carry off the superabundant serum, but, in debilitated habits, they are liable to strong objections. Opening pills, consisting of colocynth and calomel in small doses, have been recommended; volatile salts, cephalic elixirs, and cordials, are also prescribed. If a hemiplegia supervene, the cure is to be attempted by aperient pitans, cathartics, and sudorifics, gentle exercise, especially in a carriage; blisters, and such other stimulating medicines as are proper in paralytic affections.

In this alarming disease, no person who is not of the medical profession, should rely upon his own judgment in the treatment of it: we may, however, observe that we very much suspect the propriety of blood-letting at all in this complaint, and although we here state that the usual practice with medical men in the sanguineous apoplexy, is to bleed largely, yet the abstraction of blood from a person affected with this disease is of serious importance, and ought not to be adopted without a thorough conviction of its utility; which utility must of course depend upon the age and state of the patient.

It is said by *Heister*, that a person died of an apoplexy, in consequence of his being constantly exposed to the scent of three or four flower-pots of white lilies, which were kept in his chamber. This fact should deter those persons to whom such odours are sensibly prejudicial from continuing long within the sphere of their influence. See **DROPSY OF THE BRAIN AND EPILEPSY**.

In the **APOPLEXY** incident to **HORSES**, the animal drops down suddenly without sense or motion, except a working of his flanks; the previous symptoms of drowsiness, watery eyes, somewhat full and inflamed, a disposition to reel, feebleness, a bad appetite; and almost a continual hanging of the head, or resting it in his manger, sometimes with little or no fever, and scarcely any alteration in the dung or urine.

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Bleeding is the principal remedy in this disease; to prevent a return of the fit, purging medicines, with an opening and spare diet are proper. Setons, or rowels, should be placed about the head, or the whole of the forehead blistered. The most effectual mode of bleeding in these diseases, is to open one or both of the temporal arteries; when this cannot be done, both of the neck veins should be opened, that a large quantity of blood may be taken off in a short time.

It is necessary to distinguish apoplexy from lethargy, or sleepy staggers, because that disease requires a different treatment. (See *Lethargy*.) There are other fits to which horses are subject, but as their treatment is in some respects different, they will be described under *Dropsy of the brain*, *Epilepsy*, *Vertigo*, and *Staggers*.

APOTHECARY is a term given to a person who visits the sick, and prepares and gives them medicines, either on his own judgment, or according to the prescription of a physician.

The Apothecaries, as a body, have a Hall near Bridge Street, Blackfriars, where there are two magnificent laboratories, out of which all surgeons are supplied with medicines for the British Navy. They are obliged to make up their medicines according to the formulas prescribed in the Pharmacopœia of the Royal College of Physicians, and are liable to have their shops visited by the Censors of the College, who are at liberty to destroy such medicines as they think not good.

The Apothecaries were incorporated into a company, by charter obtained from James I., previously to which time they formed a part of the Grocers' Company. In the year 1721, the importance of this profession was acknowledged by an Act of Parliament, which exempted for a limited time, Apothecaries from serving the office of constable, scavenger, and other ward and parish offices, and from serving upon juries; which act was, a few years afterwards, made perpetual.

Another Act of Parliament relative

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to the Apothecaries, was passed in the year 1815, enabling the Apothecaries' Company to appoint a Court of Examiners, to examine into the qualification of every person applying for a certificate to practice as an Apothecary in England and Wales, for which certificate 10*l.* 10*s.* are to be paid, for every Apothecary practising in London, or within ten miles of it; for a certificate to practice in the country 6*l.* 6*s.* are to be paid. The penalty for practising without a certificate is 20*l.* *Assistants* to Apothecaries must now also undergo examination; the price of a certificate for an Apothecary's assistant is 2*l.* 2*s.* penalty for assisting without a certificate 5*l.* By this act also no person can exercise the profession of an Apothecary, unless he has served five years' apprenticeship.

There is also a numerous class of medical men in London, and various parts of England and Wales, called *Surgeon and Apothecary*, to which is commonly added the designation of *Man-Midwife*. To such persons, more especially in the country, are the lives and health of by far the greater part of the community intrusted; as the mass of mankind cannot afford to consult a regular Physician. A Surgeon and Apothecary, therefore, is a profession of great responsibility and importance, and we hope that those who practice it, are duly impressed with the weight of their trust.

APOTHECARIES' WEIGHT, the weight by which Apothecaries compound their medicines. The apothecaries' weights and measures are, in England and Wales, divided and arranged by the Royal College of Physicians.

The *pound weight* of the Apothecaries, is the same as the *pound Troy*, but it is divided thus:

The pound, lb.	contains	12 ounces, 3
The ounce,		8 drachms, 3
The drachm,		3 scruples, 9
The scruple,		20 grains, gr.

There are two measures of liquids in England; one is used for beer, the other for wine. The apothecaries use

wine measure; the gallon is divided in the following manner;

The gallon, <i>Cong.</i>	contains	8 pints, 0
The pint,		16 fluidounces
		f $\overline{3}$
The fluid ounce,		8 fluidrachms
		f $\overline{3}$
The fluidrachm		60 Minims, m

We have added the signs by which these several weights and measures are denoted.

It should be remembered, to prevent confusion, that although the apothecaries' pound is less in weight than the common or *avoirdupois* pound; yet, that the apothecaries *ounce* and *drachm* are greater than the *avoirdupois* ounce and drachm, and therefore, that they cannot be substituted for each other.

It should also be remembered, that Druggists and Apothecaries buy and sell their articles by *avoirdupois* weight, except in the smaller divisions of drachms, scruples, and grains; some few drugs, such as musk, &c. excepted.

The above division of liquid measures is according to the last edition of the *Pharmacopœia* of the London College of Physicians; previously to which, the sixtieth part of a drachm was called a drop, now called minim; but as *drops* from different sized bottles, and of different liquids vary, it has been thought expedient to adopt the use of glass measures, marked so that the minim or minims may be obtained with exactitude. These measures, as well as measures for drachms and ounces, can now be procured at any of the glass warehouses.

APPETITE, in general, signifies the natural instinctive desire by which the animal is led to pursue the gratifications of sense. In the present instance, however, we shall confine its meaning to the desire which we possess for food.

The appetite has been divided into three different species, although that which is evinced by the inferior animals is naturally simple, not being impaired by art. The *natural* appetite is satisfied as well with the most simple as with the most compound dishes:

such is that of country people employed in hard labour; of children who have not been mismanaged in the nursery; and of every rational person who is convinced of the advantages resulting to both mind and body, from a simple and frugal diet. The appetite of the epicure, hypochondriac, and the tippler, has been denominated *artificial*. It is almost unnecessary to add, that in such persons the inclination for sensual enjoyment remains only so long as the operation of powerful stimulants continues. When the nerves of the palate, and others concerned in mastication and digestion, can no longer be influenced by such excitement, the sensualist loses his appetite, and is punished with all the concomitant symptoms of indigestion. The *habitual* appetite is not liable to those serious objections which apply to the latter species; nor is it, in general, attended with any other disadvantages than those arising from long fasting, or an under allowance of food. Long fasting is, however, in many respects injurious: one of the most serious is, that it tempts people to eat more than the stomach can easily digest, and hence, the very common attendant upon those who eat a hearty meal after long fasting—a sluggishness, and disinclination to motion for some hours after.

Want of appetite, now more commonly distinguished by medical men, and other scientific persons, under the term *Dyspepsia*, may proceed from various causes. Perhaps, however, bad or diseased appetite is a more proper term than want of appetite: we shall, therefore, use the latter term, **DYSPEPSIA**, in treating of this important subject, and to which, on various occasions, as we proceed in our work we shall refer. *Dyspepsia* is not often an original disease; but generally arises in consequence of an inordinate indulgence in, or the effects of some of the stronger passions, such as love, fear, grief, &c. or from some debilitating diseases, such as ague, fevers, bad and low living, excess in food, drink, &c. &c. It is not easy to describe the nu-

APPETITE

merous symptoms which accompany dyspeptic patients. The most remarkable, however, and the most common, are the following: disinclination to ordinary food; distension of the stomach, particularly after eating; a frequent dejection of spirits, more or less intense; a gradual decay of the muscular strength; disinclination to motion, with languor, both mental and corporeal; the stomach and intestines much distended with wind; frequent costiveness; acidities in the stomach, rising to the throat and mouth; a limpid water, having an acid or putrid taste, is brought up; distressing head-aches, with heat in the forepart of the head alternating, or accompanied with distension of the stomach; the breathing is sometimes short and difficult, with flying pains in various parts of the body. This disease is often accompanied with a variety of mental uneasinesses and aberrations, which, by those who are ignorant of the nature of the human mind, are too often made subjects of ridicule. But we caution such persons from indulging in such injurious treatment. Kindness and soothing is a much more effectual method of curing these disorders.

Although it will be impossible to lay down a method of cure in all the varieties which are presented to us, we may say, generally, that vegetable diet, and new bread particularly ought, as a rule, to be avoided, although an admixture of *vegetable*, with animal food, if in small quantity, has not often been found injurious. Under the head *aliment* will be found many observations which are of importance to be attended to in patients labouring under dyspepsia; and, although the particular constitution of every patient may demand a modification of our doctrines relative to food, we are confident our general outlines will be found correct. We request our readers, therefore, to pay particular attention to this subject, and to consider, that in the proper use of food and drink, with wholesome exercise, and a due controul of the passions of the mind, depends, for the

most part, that excellent state of the stomach in which all its functions are performed with ease and regularity, and which produces to the whole system that truly enviable state, termed *health*. There is one peculiarity relative to the appetite, which we think it important to mention. It frequently happens, in dyspepsia, that the desire for food continues good when the state of the stomach, and its capacity for digestion, is the very reverse. Hence, nothing is more common than for patients, who have an inclination for particular dishes, experiencing, after indulging in them, all or many of the inconveniences before-mentioned. This truth ought to teach them moderation in their desires, and that the mere wish, or inclination for a particular dish, is no proof whatever that it is proper to be eaten. We have known persons whose lives have been sacrificed to this indulgence. *Temperance*, and a moderate re-trait on the inclinations for food and drink, are not only virtues, but they are essential both to our mental and physical well-being. See ALIMENT, DYSPEPSIA, FOOD, HYPOCHONDRIA, &c. &c.

An *insatiable appetite* may arise from too great a distension of the stomach in early infancy; from an over-abundant secretion of the gastric juice; from drinking large quantities of stimulating acid drinks, such as cider, perry, butter-milk, &c. &c., but especially from a bad habit of fast eating, without properly masticating hard substances. Hence the first maxim in diet should be *to eat slowly*. Another cause of a voracious appetite is *mental ignorance*: it will generally be found, that ignorant persons, who are in health, eat more than those who are well informed. This arises from the absence of ideas; knowledge, and, above all, pleasurable knowledge, stimulates the whole animal system, and supersedes, in some degree, the use of food.

The appetite for certain whimsical dishes, peculiar to females in particular states of the body, belongs to the articles GREEN SICKNESS and PREGNANCY, which see.

APPETITE, WANT OF, IN A HORSE, may arise either from fatigue, from what is termed fever, or from a diseased state of the digestive organs. If it arise from the former cause, give a cordial ball; and if the subject be old, or accustomed to take cordials, give it as a drink mixed with ale.

Loss of appetite, accompanied with languor and general debility, often happens at the time of moulting, or changing his coat; in such cases, both bleeding and purging are improper, but tonic medicines will generally be beneficial.

A *craving* appetite in a horse may justly be considered as a disease. Horses with this appetite will even eat their litter when limited in hay. The only effectual restraint is a muzzle, which should be worn constantly, except when the horse is feeding. The corn should be mixed with a large proportion of clover chaff, and only a small quantity of hay be allowed. His allowance of water, also, should be moderate. A purgative is the only medicine likely to be of service.

APPLE-THORN. See **THORN-APPLE.**

APPLE-TREE, the common, or *Pyrus malus*, L. is too well known in this country to require a minute description. It frequently grows to the height of twenty or thirty feet, and produces a considerable variety of fruit. Botanists are of opinion, that the wilding or crab-apple of the woods and hedges, is the original kind from the seeds of which the apple now cultivated was first obtained.

The varieties of this species are now multiplied to some hundreds in different places, all having been first accidentally procured from the seeds of the fruit, and then increased by grafting upon crabs, or any kind of apple-stocks. Notwithstanding the numerous sorts, not above forty or fifty are reared in the nursery. Their fruit arrives at full growth from July to the end of October, or even later. Some of the early kind ripen on the trees, others are not ripe until after they have been gathered some weeks. Indeed, the gol-

den-pippin and non-pareil, are not edible, or at least not in perfection, until about Christmas, and some other kinds even later than that.

Apples serve as excellent fruit for the dessert, the kitchen, and for making cider. The following, some of the most esteemed for eating, are mentioned in the order in which they ripen: the white juncating, margaret-apple, summer pear main, summer queening, embroidered apple, golden rennet, white calville, red calville, silver pippin, aromatic pippin, royal russeting, &c. &c. Those for culinary use are the codling, summer marygold, Holland pippin, Kentish pippin, Loan's pear main, the French rennet, royal russet, &c. Those most esteemed for making cider, are said to be the Devonsire royal wilding, red-streak, whitsour, under-leaf, john-apple, everlasting hanger, and gennet mayle, &c. The various cider counties have fruit peculiar to each. Thus, Somersetshire is noted for the following:—the stubbord, an apple which ripens about the middle of August—another which ripens very early, called the lady buddock; the valaise-apple, the penny-loaf, the cadbury, the cock-gee; the Dorsetshire red-streak, the bitter jersey, south-ham, pit-crab, &c. In general, it may be understood as a rule, that no apple which ripens early, that is to say, before the middle of September, will make good cider. See **CIDER.**

In raising these trees, the wild crab kernels are said to be the most suitable; but the seeds obtained from the apples, after the cider is pressed out of them, will produce young plants equally useful with the crab. Some of which will, no doubt, yield many new varieties of fruit; but it is not, in general, wise to trust to the accident, or to wait for the uncertainty, when a decisive mode of obtaining what kind of fruit you might choose, can be adopted by *grafting*.

The method, therefore, generally adopted, is, of course, by *grafting*. Very large and even old trees, if unproductive, may be grafted with different

APPLE-TREE

fruit to great advantage. New orchards are raised by planting wilding apple-trees, of two or three, or more years, growth, and grafting them a year or two after they have been so transplanted. We venture, however, to recommend a still more advantageous method. Let the space, in which every tree is designed to stand in the orchard about to be planted, be well dug, about one foot deep, and in a circle of about eight or ten feet diameter. Then let a proper quantity of apple-seed be strewn over each circle, and let the earth be raked over the seed so as to cover it properly. This process may be effected any time between November and March. We think November is the best time. During the next year, a great variety of plants will grow up in each circle; as the summer proceeds, let the weak and small plants be pulled up, so as to make room for the strong and vigorous ones. The next year let them be further reduced, so that if there be in each circle half a dozen, or at most ten, vigorous plants, there will be more than enough. The third or fourth year they may be all grafted, and, in the course of a year or two, the strongest and best graft in each of the circles being suffered to remain, the rest must be either thrown away, or removed to other plantations; and we do not hesitate to affirm, that a valuable orchard may be reared more early, by many years, than by the plans now usually adopted. For, do what we will, transplantation, in general, retards the growth of trees two or three, and sometimes many years. See our article GRAFTING.

The best kind of graft for the young plants is, beyond a doubt, the saddle-graft; and, in old or grown up trees, it is by no means advisable to split the stock with a knife: for in every case of splitting the stock, the growth of the tree is materially impeded. If the trees to be grafted, are full-sized, the tops of them should be cut off in winter, as sometimes when grafted without having been previously so cut, they will, as it is termed, *bleed* so much, that the grafts, will not succeed; but even this depends,

frequently upon circumstances over which the gardener has not always control. We have known grafts to succeed worse by the trees being so previously cut. At any rate, they should not be cut down to the trunk, but as many branches should be left as look kind, and about the thickness of one's arm, or less. If the trees are previously cut before grafting, it is scarcely necessary to add, that some inches of each stock must be cut off again at the time of grafting, in order to arrive at the living and healthy wood.

Pruning is an operation of no trifling moment to the apple-tree. If a tree be old, and much encumbered, the stumps, with all the decayed, rotten, and blighted branches, should be carefully removed; but instead of delaying this operation till the trees become old, it ought to be commenced even in the nursery, and regularly continued.

When the trees are so luxuriant as not to bear those prolific spurs from which the fruit proceeds, they may be checked by the following method—the tops of most of the shoots are to be pruned off in August, the bark slit in different places, and the trunk cut about one-third through with a saw, but so as not to injure the heart. For the first year or two after this experiment, the tree will not bear more fruit than usual, but afterwards, its production will be adequate to every expectation.

Apple-blossoms are, in some seasons, injured by the devastation of an uncommon number of insects, produced from a species of black fly, which deposits its eggs in the bud at its first opening, and which, by feeding on the heart of it, soon occasions it to contract and drop. To remedy this, heaps of dung, wet straw, weeds, &c., have been recommended to be placed in different parts of the orchard, and set on fire in that quarter whence the wind blows, so that the smoke may thoroughly fumigate the trees; and thus the insects, which are supposed to be brought by the wind, will be prevented from depositing their eggs. But we think this is quite a doubtful remedy. See BLIGHT.

Mr. FORSYTH, his majesty's gardener for many years at Kensington, recommended the following method for destroying the insects which infest apple-trees, and it is said, that it fully answers the desired effect. To one hundred gallons of human urine, and one bushel of lime, add cow-dung sufficient to bring it to the consistence of paint—after having brushed off all the moss, the infected trees should be anointed with this mixture about the latter end of March.

Apples, besides their aromatic qualities, are wholesome and laxative when fully ripe. In diseases of the breast, such as catarrhs, coughs, asthmas, consumptions, &c. they are of some service, particularly roasted, stewed, or boiled.

One of the best expedients to *preserve* apples for winter use is, to let them remain upon the trees till there be danger of frost, and to gather them in dry weather, and then pack them carefully away in a cool place in a *wooden* box, so that they cannot easily be affected by a change of air or temperature; or in the absence of wooden boxes, a close and cool room may be found, for large quantities, to answer the same purpose—*equal temperature* seems to be the prime requisite in their preservation, and that temperature, perhaps, should, if possible, be only a few degrees above the freezing point.

It is scarcely necessary to add, that apples, to be preserved through the winter, should be gathered with the *hand*, and, if possible, the stem by which they are attached to the tree, should be taken off with them. Nor should they be much handled at any time afterwards. All bruised apples soon spoil.

APPLICATION is familiarly used to express the study or consideration of any subject, and includes the idea of assiduity, and persevering attention. We mention this term in our work principally to observe, that the ignorance of those persons who have opportunities of acquiring knowledge, arises chiefly from a *want* of APPLICATION. Did many persons devote but one half of that time to the acquisition of useful and

advantageous knowledge, which they do to frivolous, vain, or vicious pursuits it is quite manifest, that their own well-being would be improved, and their fellow-creatures much benefited. Men are too apt to take shelter in their fancied or supposed incapacity for praiseworthy pursuits, when, if their talents and conduct were analysed, they will be found, most commonly, merely the instruments of misapplication. Application, in the hands of the philosopher and the moralist, is, indeed, of primary importance; without this state of mind, little can be achieved; with it, wonders have been, and may be, effected. Application is one of the hinges on which the present improved methods of education turns; it cannot be too strongly insisted upon.

APPRAISEMENT, the valuing, or setting a price on goods, lands, &c. If a sworn-appraiser value goods too high, he is obliged to take them at the price appraised. Persons appraising estates or effects for hire or reward, not being licensed auctioneers, must take out an annual license (for which a duty of 10s. is to be paid), under the penalty of 50l. Appraisers neglecting to set down appraisements on paper, duly stamped, forfeit 50l. and persons employing them, and receiving such appraisement without stamp, forfeit 20l.

Appraisements are subject to a duty as follows:—

	£	s.	d.
Amount not exceeding 50l.	0	2	6
100l.	0	5	0
200l.	0	10	0
500l.	0	15	0
Exceeding 500l.	1	0	0

But appraisements in courts of admiralty, and for ascertaining legacy duties, are exempt.

APPRENTICE, a youth of either sex, bound by some indenture to some person, in order to be instructed in a certain science, mystery, or trade. The statute concerning apprentices, was first enacted by the 5th of ELIZABETH, and is the foundation on which all apprenticeships rests; although the different provisions have been extended, re-

stricted, modified, or repealed, it still remains the corner-stone of the building.

The statute of ELIZ. directs all indentures of apprenticeship to be for seven years at *least*; but it has been repeatedly determined, that if the apprentice arrive at the age of twenty-one years, before the expiration of the term, he may avoid them, although he be himself a party to the instrument. The same statute says, also, that all indentures, for a less term than seven years, shall be void. But the interpretation put on the word *void*, by the courts of law, has also been *voidable* at the option of the parties.

Parish apprentices, by the 43d of ELIZ., must be bound by the major part of the church-wardens and overseers, with the consent of two justices. And, by the 56th of Geo. III., the indenture must be allowed by two justices of the county *into* which the apprentice is to be bound, as well as by two of the county from which he is bound. By this statute, poor children are not to be bound till they have attained the age of nine years, nor to any person living at a greater distance than forty miles from the place to which every such child shall belong (except in certain cases), under a penalty on the overseers binding, and also on the master receiving, of 10l. respectively. Nor shall any master be at liberty to discharge, dismiss, or assign, any such apprentice, without the consent, in like manner, of two justices, under a similar penalty of 10l.

The 5th of ELIZ. prohibited all persons from setting up, and exercising any trade or mystery, except they had served an apprenticeship for seven years. This clause operated as a restraint upon genius, industry, and capital; it was, therefore, repealed by the 54 Geo. III., except so far as the bye-laws of any city, corporation, &c. are concerned.

The Chamberlain of London has particular cognizance of every thing relating to apprenticeships within the jurisdiction of that city.

Apprenticeships were unknown to the ancients, and, although it is now the fashion to serve apprenticeships in almost all trades and professions, we doubt the utility of confining a boy to one occupation, even for the period of five years. It contracts the faculties, and, in many instances, makes him little better than a machine.

APRICOT-TREE, the *Prunus Armeniaca*, L. is a species of the plum or cherry. LINNÆUS has reduced these different trees to one genus, but we shall enumerate here only the varieties known under the name apricot.

1. The *male* or *early* apricot; has more stone than pulp, and ripens in July.

2. The *white* apricot is less influenced by cold than any other sort, and bears fruit in greater abundance.

3. The *orange* apricot, is more fit for preserving and for pastry than for the dessert.

4. The *red* apricot. The leaves of this tree are longer than those of any other variety.

5. The *large* or Turkey apricot, exceeds in size and beauty all the other sorts, but is not productive.

6. The *Buda* apricot, a native of Africa, is one of the finest and most delicious.

7. The Brussels apricot, is of a delicious taste. The skin is apt to burst before the fruit is mature; it seldom ripens till August or September.

8. The *peach* apricot is larger than any other species, while it possesses the sweetness of the apricot combined with the taste of the peach. This tree requires a temperate climate, and will not thrive in the open air of this country.

All the varieties of apricot-trees, were originally raised from their stones. They have afterwards been propagated by budding or grafting on any plum-stock. The soil most congenial to them is a rich black mould; they will not prosper in a loamy, sandy, gravelly, damp, or cold ground. As they are generally placed against walls in Great Britain, an eastern aspect is the most eligible and proper, as they are apt to become mealy

AQUA-FORTIS

from the constant heat of the sun in a southern direction. They may be planted at a distance of sixteen or twenty feet from each other, in the month of October, and the ground round the roots should be covered with rotten dung to keep out the frost. About the beginning of March, the head of the tree must be cut off to about four or five eyes above the bud, so that the sloping side may be toward the wall, taking care not to disturb the root. In spring, if the weather be dry, the roots must be gently refreshed with water, and covered with a little straw or grass sods. Let the new branches be nailed to the wall in a horizontal position, and such shoots as are produced fore-right must be cut off. At Michaelmas unnaul the branches, and shorten them in proportion to their strength; after which, nail them as horizontally as possible. The second and third year the trees may have nearly the same management. It should be also observed, that apricots bear their buds and blossoms, not only on the branches of the preceding year, but also on the young shoots and tops of these branches; hence the pruning of them in summer requires additional care.

Different plans have been adopted to prevent the early blossoms of the apricot from being destroyed by frost. The gardeners in the neighbourhood of London cover the trees, during the night, with Russia matting, whilst they are in blossom, and we believe for some time afterwards. This is the best and most effectual way to preserve the fruit.

In France and Germany the orange-apricot is preserved in a dry state for the winter, when it forms a delicious ingredient in pyes, tarts, &c.

Apricots, when eaten in moderate quantities, are of the same nature as other subacid and saccharine fruits; but they are not suited to dyspeptic persons, on whose stomachs vegetables, and other saccharine matter, most readily ferments.

AQUA-FORTIS, the nitrous acid, of a certain strength, and so called

from its dissolving power. See NITRIC ACID.

As this powerful liquid is used for various purposes in the arts and manufactures, but chiefly by dyers, brass-founders, hatters, &c., great caution should be observed, both in preparing and employing it; as it possesses a very caustic property, and its fumes are highly detrimental to the organs of respiration. Hence, artisans frequently become subject to convulsive coughing, spitting of blood, and paralytic affections, trembling, paleness of the countenance, loss of smell and taste, and sometimes pulmonary consumption. To counteract such fatal consequences, we advise them to make use of oily and bland nourishment, and externally to secure the mouth and nose, by tying a handkerchief round those parts when they are exposed to the fumes of this volatile acid.

Where a person has by mistake or design swallowed a quantity of *aqua fortis*, CALCINED MAGENSLIA, from a number of experiments, has been found to be the most effectual remedy. An ounce of this should be mixed with a pint of water, and a glassful taken every two minutes, so as to favour vomiting, and prevent the acid from acting. Should not this be at hand, a decoction of linseed, marshmallows, or any other mucilaginous liquid, may be taken in the mean time, as the success of the treatment depends entirely upon the activity with which aid is given; a few moments' delay frequently determines the fate of the sufferer. Magnesia is the chief remedy; but in lieu of it, soap dissolved in water, half an ounce to a pint, and chalk and water in any dose, will be found extremely useful. Glysters prepared with the same substances should also be given.

If vomiting, from the means employed, should not take place, the use of emetics, or other means of exciting sickness, must be abstained from. The acid being neutralized, the inflammation caused by its action is next to occupy our attention. To reduce that, cloths steeped in a strong and slightly

warm decoction of linseed or mallows must be applied; and should the weight be insupportable, the stomach must be frequently wetted with a sponge; and if it can be obtained, the patient may be placed in a warm bath. If relief be not speedily obtained by these measures, twelve or fifteen leeches should be applied, and bleeding performed. If the pain should remove from one place to another, the same number of leeches should be applied to such part also, and, even upon a third change of situation, we ought not to be afraid of applying fifteen or twenty more. The safety of the patient henceforth depends upon the copious evacuation of blood, the feebleness caused thereby is to be considered only as a slight inconvenience. These energetic measures will be assisted by the administration of a drink made with linseed, mallows, or gum-water slightly sweetened; every sort of food, not excepting broth, is to be forbidden.

If there be difficulty of swallowing, and the inflammation be great, twelve or fifteen leeches should be applied to the neck. Should convulsive movements continue after the inflammation has subsided, thirty drops of æther, and twenty drops of laudanum, may be mixed with four ounces of mint water, or other simple fluid; a dessert spoonful of such mixture to be taken every fifteen minutes. Or a decoction of three or four white poppy heads in a pint of water, with three ounces of sugar, may be taken in the same way.

When the fever has subsided the patient may be permitted to take a little veal or chicken-broth; and, when convalescent, gruel, rice-milk, &c., carefully avoiding all solid food, wine, and spirits. Wine, regarded by many persons as proper to restore action, is in this case a new poison, and acts precisely as that, the effects of which we have been teaching to cure. It is only after three or four days that solid food is to be taken, in small quantities, and of easy digestion.

• Applied to the exterior parts of the

body the acids are not absorbed; the injuries which they produce, are to be treated in the manner directed for burns. See BURNS.

Means of distinguishing acids. They change the blue colour of the tincture of litmus, or turnsole, red. *Sulphuric acid* (oil of vitriol) has no odour; heated with charcoal, it discharges the same smell as sulphur when burnt. *Nitrous acid*, poured upon copper, effervesces and produces copious fumes of an orange colour. The concentrated acid (*nitric acid*) is colourless; but poured upon copper it has the same effect. *Concentrated muriatic acid* gives off whitish vapours, and, mixed with a solution of nitrate of silver, throws down a white, heavy, and, curdled precipitate, which cannot be dissolved in water or nitric acid. *Aqua-Regia*, or nitro-muriatic acid, acts upon copper the same as nitric acid. *Fluoric acid* corrodes glass. *Oxalic acid* heated in a tube is almost entirely volatilized, a small portion is decomposed, and leaves a little charcoal; a solution in distilled water, added to lime water, causes a white precipitate, which is *not re-dissolved* by an excess of oxalic acid. *Tartaric acid* is entirely decomposed by heat, and leaves much carbon; added to lime-water it causes a precipitate, which is easily re-dissolved by an excess of acid. *Citric acid* is decomposed by heat, and does not precipitate lime-water, unless added in solid lumps, or when the mixture is heated.

We have been thus minute relative to the treatment of persons who have taken aqua-fortis improperly, because the same treatment will be proper when many other acids are taken, and to which, as we proceed in our work, we shall, to avoid repetition, refer. We have also described the means of distinguishing the several acids for the same reason.

Aqua-fortis, considered as a medicine, possesses the same properties as the nitric acid, but in an inferior degree. See NITRIC ACID.

AQUA-REGIA, called by modern chemists the *nitro-muriatic acid*, is a

mixture of nitric and muriatic acids. It is usually made by dissolving sal-ammoniac, or common salt, in nitrous acid. When the former is employed, the usual proportion is one of the salt to four of the acid; but equal parts will be necessary to dissolve *platina*.

Aqua-regia is the only acid menstruum which will dissolve gold, hence its name; it dissolves also all other metals, silver excepted: a mixture of three parts of the muriatic acid with one of the nitric, is the best adapted for this purpose. One hundred grains of gold require for their solution two hundred and forty-six of this mixture.

For the cure of those casualties, arising from an improper use of this powerful acid, we refer to the preceding article.

AQUA-VITÆ, is either brandy, or spirits of wine prepared simply, or with aromatics. See *BRANDY*.

ARABLE LANDS, are those naturally fit for tillage, or which may, by proper means, be prepared for the production of grain, and other vegetables. Our observations relative to these, will be more appropriate when we come to treat of *HUSBANDRY*; to which, therefore, we refer.

ARBITRATION, is a power given by two or more contending parties, to some person or persons, to determine the dispute between them. Matters, however, relating to a freehold, debts due on a bond, and criminal offences, may not by the law be arbitrated. Arbitration is unquestionably a mode far preferable to litigation in most disputes, provided care be taken to choose competent arbitrators, and in case the arbitrators cannot agree, to provide for their non-agreement by the appointment of an umpire in the bonds of award. This is of the utmost importance: for we have known instances where the arbitrator on one side, has altogether refused to act, and the arbitration thereby has become a nullity. See *AWARD*.

ARBOUR, in gardening, is a kind of shady bower, formerly in great esteem, but of late almost generally abandoned in Great Britain, on account of

the damp and unwholesome shelter which it affords,

Arbutus. See *STRAWBERRY-TREE*.

ARCANUM, strictly speaking, signifies any thing which is involved in mystery; but in physic, it denotes a remedy, the preparation of which is carefully concealed, either to enhance its value, or increase its reputation among the vulgar. See *NOSTRUM* and *SPECIFICS*.

ARCHERY, is the art or exercise of shooting with a bow and arrow. Among ancient nations, the bow was the principal instrument of war, and the skill of the archer decided the fate of battles and empires. The English were formerly expert in the use of this instrument, but in Europe, as an art of offence and defence, archery is wholly out of use. As a species of amusement it is still occasionally practised. In Great Britain, there are several societies of archers.

ARCHITECTURE, denotes the art of building in general, although it is chiefly applied to the construction of edifices appropriated to the purposes of civil life, such as houses, churches, halls, bridges, &c. &c.

The origin of this art is involved in obscurity, but the origin of all regular buildings, has been generally deduced from the construction of the meanest huts. These were at first, probably, made of a conic figure, but being inconvenient on account of their inclined sides, both the figure and the construction of the huts were changed, by giving them a cubical form.

Mankind insensibly improved on the art of building, and invented methods of rendering their dwellings durable, handsome, and convenient. They deprived the trunks of trees of their bark, and other inequalities of surface, raised them above the wet, or humid soil, by means of stones, and also, covered each with a flat stone, or slate, to exclude the rain. The position of the roof, was also altered so as to enable it to carry off the water. In fact, from this simple construction there is no doubt that the orders of architecture

ARC

took their origin: for when the rude builder began to erect stately edifices of stone, he imitated those parts which from necessity had composed the primitive huts. Thus the upright trees were the origin of columns, and the beams, joists, rafters, &c., which formed the covering, gave rise to architraves, frizes, triglyphs, cornices, &c.

The Egyptians, beyond a doubt, preceded Europeans in the arts. The Greeks derived their first ideas of building from the Egyptians; but man being unquestionably influenced by the mode of government under which he lives, the Greeks having lost with their independence, their ascendancy in works of genius, the Romans must from that period be considered as encouragers of this noble art.

The orders, as now executed by architects, are five. 1. The *Tuscan*, used in works where strength and simplicity are the essential requisites. 2. The *Doric*, nearly similar to the *Tuscan* in strength, but enlivened by its peculiar ornaments. 3. The *Ionic*, more delicate than either of the former, and distinguished at its head by a scroll or volute. 4. The *Corinthian* displays more beauty and ornament than the others, having an elegant capital of carved work, and is therefore frequently used for the internal decorations of stately rooms. 5. The *Composite*, nearly the same as the *Corinthian*, with the addition to its capital of the *Ionic* volute, or scroll.

The style of building, as practised throughout Europe in the early ages, was denominated *Gothic*, *Saxon*, *Norman*, and *Saracenic*. But what we commonly call *Saxon*, is in reality Roman architecture.

Architecture being a useful and elegant art, is carried on in three different ways; for utility and ornament, or both of these combined.

Edifices intended solely for utility should, in every part, correspond to the design. Hence, any material deviation from that principle, for the sake of ornament, ought to be avoided. Building of such a nature only, are compa-

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tible with the design of our work, and of these we shall give a more particular account under the article *BUILDING*.

ARGIL and **ARGILLA**, Clay. A genus of the class earths, consisting of alumine and silica, with, generally, some oxyd of iron, and inflammable matter; opaque without lustre; soft to the touch, earthy, lightish, imbibing and retaining water and oil, by each of which it is softened, and rendered plastic by the former, and emitting an earthy smell; not effervescing with nitric acid, contracting and becoming harder in the fire. See *CLAY*.

ARITHMETIC is the art and science of numbers: or that part of mathematics which considers their powers and properties, and teaches how to compute or calculate truly, and with ease and expedition. Arithmetic is of the highest antiquity: nothing, indeed, being more clear and familiar than the idea of number; the first men must have counted their fingers, their cattle, days, trees, &c.; and it is plain that the formation of societies, and the possession of property, suppose the necessity of calculation.

Almost all nations of which we have any knowledge, have chosen the same system of numeration, namely, counting by tens. This ingenious system, which forms the basis of our modern arithmetic, was long familiar to the Arabians before it penetrated to our quarter of the world. But the honour of the original invention appears to belong to the Indians.

Arithmetic consists chiefly in the four principal rules, or operations of Addition, Subtraction, Multiplication, and Division; to which may be added, the Extraction of Roots. Besides these many other useful rules for expediting and facilitating computations have been contrived, which are applications of the former, such as those in vulgar and decimal fractions, the rules of proportion, progression, allegation, false position, fellowship, interest, barter, discount, equation of payments, reduction, tare and tret, &c.

It is not consistent with the design

of our work to enter into an exemplification of the different rules and operations in arithmetic. But every young arithmetician should remember, that before he forms a particular question, or numerical proposition, it is absolutely necessary to consider, whether the terms be directly proportionate to each other, otherwise, he will be liable to commit gross errors. Although, in buying and selling, the *price* increases or decreases in the same relative proportion as the *quantity* of goods; yet in geometry, natural philosophy, &c., those things which appear at first sight, appear to be simple in proportion to each other, may, on a mature investigation, prove the contrary. Previously, therefore, to the solution of questions respecting these sciences, he should become acquainted with those elementary principles upon which they are founded.

The science of arithmetic, is undoubtedly one of the most useful with which mankind have at any period been conversant. Since the introduction of the systems of Dr. BELL, and Mr. LANCASTER into our schools, a more expeditious method of teaching it has been adopted, which merits great encouragement, but our limits prevent us from detailing it here. See EDUCATION.

AROMATIC VINEGAR, a solution of camphor, and various essential oils in the acetic acid; it possesses a most pungent and agreeable odour, and is useful in preventing the contagion of infectious diseases, and in removing pains in the head, &c. See VINEGAR.

AROMATICS, a term given to such substances as yield a strong and fragrant smell, and impart a warm taste. In this class are included the various spices, such as nutmegs, cloves, cinnamon, mace, &c. Some of them have a sweetness mixed with the aromatic principle, such as angelica root, anise seed, and fennel; some are astringent, as cinnamon; others afford a strong mucilage, as cassia; others a bitterness as orange and lemon peel.

Aromatics form a useful and agree-

able ingredient in many articles of cookery, especially in dishes prepared of watery and flatulent vegetables, of which they are the best correctors; they warm the stomach, and stimulate the whole system; raise the pulse, and quicken the circulation. In cold languid habits, and a relaxed state of the solids, they increase vital action, and promote the salutary secretions; but to full habits, and inflammatory dispositions, they are certainly pernicious.

ARGUEBUSADE WATER, is a medicinal preparation, which has received this name, from its great efficacy in healing gun-shot wounds, although it is at present with more propriety applied to bruises, tumours arising from blows, and particularly to such parts as are commonly termed black and blue, containing coagulated blood. Various mixtures are used for this purpose, but the following deserves a preference: take of

Distilled Vinegar,
Rectified spirits of wine, of each one
pint and a half,
Double refined sugar half a pound,
Sulphuric acid, (oil of vitriol,) five
ounces.

Dissolve the sugar in the distilled vinegar and spirit of wine, to which add gradually the sulphuric acid.

This composition may be applied to the injured part in a cold, or lukewarm state, and the compresses should be kept continually moist: for, as soon as they become dry, the pain is liable to return. By its astringent property, it contracts the skin; and the sugar which settles on it, not unlike a coating of glue, ought to be carefully washed off, every other, or every third day, with goulard water. Perhaps no remedy is equal to this, if it be properly and timely applied. Care must be taken not to sprinkle, or shed any of the mixtures on clothes, or linen, which would be burnt and destroyed by its causticity. See BRUISES.

ARRACK, or **RACK**, is a spirituous liquor imported from the East Indies, and used either as a cordial, or an in-

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gredient in punch. It is obtained by distillation from a juice which flows by incisions out of the cocoa-nut tree, and also from rice or sugar, fermented.

The arrack now in general use, contains but a sixth, and sometimes only an eighth part of alcohol, or pure spirit.

Genuine arrack is supposed to possess balsamic, softening, and restorative properties, and to be less liable to produce the usual inconveniences of other spirits. It is said that persons who are addicted to the use of ardent spirits, and those troubled with gout and rheumatism, but who cannot comply with the rules of sobriety and temperance, may use arrack in preference to other spirits.

Arrack is subject to the same excise laws as all other kinds of foreign spirits.

ARROW is a missive weapon of defence, used by Archers. Its form is slender, pointed, and barbed. See ARCHERY.

ARROW-GRASS, a plant of which there are three species; two only are natives of Great Britain: the *Triglochin palustre*, or marsh, and the *maritimum*, or sea arrow-grass. The former is frequently met with in marshy grounds, and the latter near the sea-coast, and in saline tracts. These plants are eaten with avidity by sheep, for which they serve as an excellent food, and as they thrive extremely well in moist and swampy places, where few other vegetables will grow, their culture is deserving the attention of the farmer.

ARROW-HEAD Common, the *Sagittaria sagittifolia*, L. is one of those neglected plants which, though growing wild in many parts of England, are not converted to any useful purpose.

The root of the arrow-head is industriously cultivated in China and America, where it attains the size of several inches in diameter; while in this country, of which it is a native, we take no notice of it. As it constitutes a considerable part of the Chinese diet, no reason can be alleged why it might not be used for the same purpose in this country. It requires a low, cold, marshy situation, and a clayey soil, in which it grows

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luxuriantly, and produces an oblong, thick bulbous root, which, from its mealy nature, may be easily converted into starch or flour. There are two methods of propagating this beneficial plant; either by the wild-growing fibres of the root, or by the seed.

ARROW-ROOT, INDIAN, or the *Maranta*, a plant of which there are four species: the *arundinacea*, *touchas*, *mallaccensis*, and *comosa*. All of them are herbaceous, perennial exotics of the Indies, and kept in our hot-houses merely for curiosity. The first of these species is the true starch-plant, and it is likewise used by the Indians to extract the poison communicated by their arrows. It is a native of the West Indies, rises about two feet high, and in those islands, serves as the common material for starch, which is obtained from the root, well beaten first of all in a large mortar to a pulp, which is then mixed with water, and the solution filtered, when a fine powdery substance is precipitated, which, on being dried in the sun, is the powder denominated in this country *Indian Arrow-root*.

This powder, now so common, and so much in use, yields unquestionably a large proportion of nutritive mucilage: a single table spoonful makes a pint of strong and nourishing jelly, affording a very proper food in those diseases in which animal food must be abstained from. It forms too a variety in the diet of sick persons of no trifling advantage, although perhaps not intrinsically differing in quality from *sulep root*, *tapioca*, and *sago*. Indeed, all these afford excellent varieties for the sick and convalescent.—See the respective articles.

ARSENIC is a metal of a steel blue colour, quite brittle, and of the specific gravity of 8.3. It readily fuses, and in close vessels may be distilled at a temperature of 360°, which is lower than its freezing point. Its vapour has a very strong smell resembling garlic. Heated in the air it easily takes fire, burns with a blue flame, and produces copious white fumes of oxide. Exposed to a moist air, it gradually becomes incrustrated with a grey powder, which is

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an imperfect oxide. *This metal, and all its compounds, are virulent poisons.*

Native arsenic has been found in Saxony, Hanover, France, Bohemia, and Cornwall.

There are two definite compounds of arsenic and oxygen. These compounds are sour and soluble in water, and are now termed *arsenious* and *arsenic acids*.

The *arsenious acid*, or, as it is commonly called, *white arsenic*, or *oxide of arsenic*, is the best known, and most commonly occurring compound of this metal, and as cases of poisoning by it are frequent, every person should be acquainted with its characteristic properties.

Arsenious acid, is prepared at Joachimstahl in Bohemia, from arsenical cobalt ores, which are roasted in reverberatory furnaces, and the vapours condensed in a long chimney, the contents of which, submitted to a second sublimation, afford the white arsenic of commerce. It is white, semi-transparent, brittle, and of a glassy fracture. Its specific gravity is 3.7. Its taste is acrid, accompanied by a very nauseous sweetness, and it is virulently poisonous, producing inflammation, and gangrene of the stomach and intestines: it also proves fatal when applied to a wound. The *powder of white arsenic*, in which state it is commonly sold in the shops, is of a dull colour, of a gritty feel, and much heavier than powdered cream of tartar.

The preparations of arsenic, which are more commonly taken either by accident or design, and which operate as violent poisons are the following: white arsenic, (arsenious acid) Arseniates of soda, ammonia, and potash; orpiment, realgar, fly-poison, arsenical paste, or caustic of Justamond.

To get rid of the poison by producing copious vomiting and purging, and to pursue the usual means for subduing and preventing inflammation, are the principal points of treatment to be adopted in cases where this poison has been taken.

Surgeons have long been in the habit of using arsenical caustics in cases of cancer; experience proves, however, that,

injudiciously used, they may cause death, in twenty-four, or forty-eight hours. The greatest precaution is therefore necessary in the employment of these preparations. Swallowed even in extremely minute doses, compounds of arsenic are energetic poisons, which do not cause death by the inflammation which they excite in the stomach and intestines, as is generally supposed, but because they are absorbed, and destroy the vital properties of the heart. Frequently this organ is inflamed and ulcerated. Can we therefore flatter ourselves with obtaining any permanent advantage from the use of arsenic in intermittent fevers, &c., as some medical men have thought who have administered this medicine at different times? We believe it is dangerous to continue the use of arsenic, if the disease be not cured by three or four doses, and these should be very small, and employed with extreme precaution; in fact we not only incur the risk of giving rise to alarming symptoms, shortly after the administration of the remedy; but also of disposing the patient eventually to a disease of the heart.

When a person has taken *arsenic*, the best remedy consists in causing a large quantity of sugar and water, of warm or cold water, or of decoction of linseed, or mallows, to be swallowed; by these means the stomach is filled, vomiting caused, and the poison thereby ejected. A drink composed of equal quantities of lime water, and sugar and water, may also be given.

Theriaca, oil, gall-nuts, the bark of the pine, liver of sulphur, vinegar, the pomegranate, and peruvian bark, suggested by some, ought not to be used, because they are useless, and often dangerous.

When the principal symptoms are subdued, the patient may take a little thin veal, or chicken broth; and, when he is convalescent, he may take gruel, rice-milk, &c., avoiding with care all solid food, wine, and spirits. But if, on the contrary, in spite of the measures directed above, the symptoms increase; if the pains in the bowels be-

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come violent, and convulsions take place, leeches must be applied to the abdomen, and bleeding performed: in a word, the directions given for subsequent treatment, under the article *aqua-fortis*, must be attended to, and followed up with energy.

As arsenic either accidentally or intentionally taken, is a frequent cause of death, and often the subject of judicial inquiry, it becomes of importance, to point out the best means of distinguishing arsenical preparations, and the most effectual mode of discovering their presence.

White arsenic in powder, (called also *arsenious acid*, and *deutoxide of arsenic*,) is of a white colour, somewhat like powdered loaf-sugar, but differs considerably therefrom, being much heavier, and is not so readily soluble in water. When thrown upon live coals, or hot iron, it diffuses a white smoke, which smells like garlic; it becomes of a *fine green colour* when put into a solution of the blue ammoniacal sulphate of copper. *Arsenic acid* is white, and also gives out a smell of garlic when placed on hot iron or burning coals; it is easily dissolved in water, and changes to a fine blue, when mixed with the ammoniacal sulphate of copper. *Orpiment* is yellow; heated to redness with potash, it diffuses the vapours of arsenic, which smells like garlic. *Realger* is red, and does the same as orpiment, when mixed with potash, and heated. There is a powder sold to destroy vermin, which is the *black oxide of arsenic*. This gives off an odour of garlic when heated, and becomes green, when left for some hours in a solution of the blue ammoniacal sulphate of copper.

When arsenic proves fatal, it is very seldom found in the contents of the stomach after death, but is generally previously voided by vomiting, or by stool; we can often detect it in the matter thrown off the stomach, in the form of a white powder subsiding in water. It should be remembered, that the inflammation of the stomach, which results is generally a secondary effect, and takes place equally whether the poison be swallowed, or applied to a wound.

If minute quantities of white powder be detected, however, in the stomach after death, or in the matter vomited, it is to be carefully collected, and treated as follows:

(a.) Mix a small portion of it with about two parts of black flux, introduce the mixture into a glass tube, and gradually heat it red hot in the flame of a spirit lamp. If arsenic be present, a steel-coloured sublimate will attach itself to the cooler part of the tube, which heated in contact with air, evaporates in a *white smoke strongly smelling of garlic*.

(b.) Boil the suspected matter in a little distilled water: and when the solution has cooled, add a few drops of solution of sulphuretted hydrogen. If arsenic be present, a *yellow precipitate* will appear.

(c.) To the solution b, add a drop of solution of subcarbonate of potash, and then a drop or two of solution of sulphate of copper: an *apple-green precipitate*, indicates arsenic.

(d.) Add to the solution with potash c, a drop of nitrate of silver. A yellow precipitate, indicates arsenic.

It must be observed in regard to these tests, that the first only is unequivocal, and that the appearances produced by the others, may originate from the presence of other substances. When, however, all the above appearances ensue, no doubt of the existence of arsenic can be entertained. The several precipitates should be collected, and will, when placed upon a red-hot iron, exhale the peculiar smell of arsenic.

It should be remembered, however, that the *absence* of the *smell of garlic* is not in every instance of analysis a proof of the absence of arsenic. Dr. PARIS has lately demonstrated, that if a few grains of the *arsenious acid* be heated on a plate of copper, by a spirit lamp, or a blow pipe, no odour is perceptible: for the whole of the acid is dissipated before the copper acquires a sufficient heat to produce the garlic smell. So if the *arsenious acid* be heated on a plate of zinc, the smell is not evolved, until the zinc is in a state of

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fusion ; if, instead of these metals, gold, silver, or platina be employed, no smell of garlic whatever is produced.

Although many eminent medical practitioners assert, that arsenic, when properly administered, is a medicine of great efficacy, particularly in *agues* ; and although the London College of Physicians, have introduced a preparation of this powerful drug into the last edition of their Pharmacopœia, which possibly, in skilful hands, may be administered with advantage, we yet feel disposed to question its utility, even in *agues*, believing that these intermittents may generally be cured by more mild, safe, and equally effectual means ; and believing also that the internal use of arsenic, should not be recommended to those who are, and will be the general readers of a Domestic Encyclopædia, whose errors, although venial, may be productive of the most alarming and fatal consequences.

Arsenic is very usefully employed in various branches of the arts and manufactures. By glass makers, by painters, and by dyers. It is also used in domestic economy, although not always with due precaution. Farmers also dissolve it in lime water, for steeping wheat, in order to prevent the smut.

Artists, exposed to the fumes or vapour of this mineral, ought to be extremely cautious to preserve themselves from its influence on their mouth and nostrils, as well as from touching it with their hands : for every contact may be attended with serious consequences. They should dress in thick and firm clothes, keep at a proper distance from the exhaling fumes, and cover the orifices of the face with a mask made for the purpose. Their diet should consist of a great portion of bland and mucilaginous nourishment, such as fresh butter, pork, sweet oil, milk, artichokes, and similar vegetables.

ART is a proper disposal of natural objects by human thought and experience, so as to answer the several purposes of mankind ; in which sense, the word *Art* stands opposed to *Nature*.

Arts are generally divided into the *useful* and the *polite* : the useful arts, consist of those in which manual labour has a greater share than intellectual exertion, and by which we are provided with the necessaries and conveniences of life ; many of these arts are denominated *trades*, as baking, brewing, carpentry, &c. The polite, or *fine arts*, are such as depend principally on the application of mental abilities, and the active powers of a fertile imagination ; of this nature are poetry, painting, sculpture, music, and the like.

Many of the useful arts may be considered to be nearly coeval with the human race ; but their present improved state is such, particularly in Europe, that no previous age can be, for a moment, placed in competition with their present state, whether we regard them as exerted in the structure of our habitations, in the preparation of our food, or the manufacture of clothing, both for use as well as ornament ; in the latter sense, they of course come rather under the denomination of fine arts.

It is well known, that in every country, where the people are barbarous and illiterate, their progress in this respect is extremely slow.

In countries thinly inhabited, it is not uncommon to find one person exercising several professions, and this is productive, in some degree, of good effects : for when several operations are carried on by the same individual, his mind becomes invigorated by the application and use of the various talents which are required to perform them ; whereas when the bodily and mental powers are directed to a single object, although in one particular pursuit the person may become dextrous, he is, in a manner, converted into a dull and inanimate machine. The progress of the arts and sciences towards perfection, is also greatly promoted by emulation. When a people are once roused from their indolence and lethargy, by whatever fortunate event or change of circumstances, the progress of the arts is generally rapid. Prosperity, contrasted with former penury, creat-

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in the mind a spring which is vigorously exerted in new pursuits.

From the useful naturally results the cultivation of the liberal arts. Persons who enjoy every convenience from the former, turn their attention to the latter, hence arise sculpture, painting, literary composition, &c.

The fine arts are not fully enjoyed except by persons of taste, and those who can expend large sums for supporting them: thus it will be found, that they seldom or never flourish in countries where they do not obtain the liberal patronage of the sovereign, or the munificence of wealthy individuals. On the other hand, the useful arts are always encouraged in every well-regulated state.

In Great Britain, various societies have greatly contributed to the improvement of both the useful and the polite arts, amongst which the Royal Society, the Royal Academy of Painting, and the Society for the Encouragement of Arts, Manufactures, and Commerce, stand foremost.

There are various particular arts, as those of memory, swimming, deciphering, &c. of which we propose to treat in their respective places.

ARTERY, or a pulsating blood-vessel, is a cylindrical canal, conveying the blood immediately from the heart to all the parts of the body, for the purpose of nutrition, preservation of life, generation of heat, and the secretion of different fluids. From the trunk of every artery arise branches; from these, again, extend ramifications of blood-vessels, which become progressively smaller, so that the distribution may be traced by the microscope in more than twenty different divisions, nay, to an almost infinite number.

The motion of the blood in the arteries is called the *pulse*, and corresponds with that of the heart.

All the arteries derive their origin from the ventricles of the heart; namely, the pulmonary artery from the right, and the aorta, or great artery, from the left; of which two the rest are branches.

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They terminate in small viewless veins, exhaling vessels, or *anastomose* with one another.

It is deserving particular notice, that an injury received by a very considerable vein, is not nearly so dangerous as that of a small artery, especially in the vicinity of the heart (See **BLEEDING** or **HÆMORRHAGE**); and that single arteries sometimes become ossified, or acquire a cartilaginous and bony consistence. See **ANEURISM**, **ASSIMILATION**, **BILE**, **BLOOD**, **CHYLE**, **HEART**, **PULSE**, **SALIVA**, **VEINS**, **URINE**, &c.

ARTICHOKE, *Cinara*, *L.* although an exotic, is a plant well known, and much cultivated in this country. There are four species, but only two are reared for use:—the *scolymus*, or garden artichoke, and the *cardunculus*, or cardoon, both of which are propagated by slips or suckers, arising, in the spring, from the roots of the old plants. The slips should be taken from good plants in March, or the beginning of April, and set in an open space of the kitchen-garden in rows, at the distance of five feet from each other. By this process, artichokes may be produced in the autumn of the same year. The cardoon may be propagated by seeds sown in March; about Michaelmas they attain to a considerable size; the leaves of each plant should then be tied, that they may be hoed for the purpose of blanching, which will require six or eight weeks. Thus the plants will be fit for use in November or December, and continue the whole winter.

Artichokes flourish only in a rich and moist soil; but if it be too wet, the roots are apt to decay in severe frosts.

ARTICHOKE, the *Jerusalem*, is a plant of the same genus as the sunflower. It produces bulbs at its roots, has been long cultivated in gardens as an esculent vegetable, and, in many respects, resembles the potatoe, but is not in such general esteem. It is, however, much valued for feeding hogs.

When these roots are given to horses, they should be washed, cut, and ground in an apple-mill; the proportion to be

given at each time is eight pounds, with two ounces of salt, and a bite of hay, thrice daily.

The culture of this root is the same as that of potatoes. Four hundred and eighty bushels per acre have been obtained of it.

ARTICULATION, in language, is the division of sounds into distinct syllables, and consists in giving every letter its due proportion of sound, so that the hearer may perceive and determine their number without difficulty, while he is enabled to ascertain the respective letters in every syllable.

A *just delivery*, consists in a distinct articulation of words, pronounced in proper tones, suitably varied to the sense and emotions of the mind, with due observance of accent; of emphasis in its several gradations; of rests, or pauses of the voice in proper places, and well-measured degrees of time; in carefully sounding the unaccented syllables, and particularly the vowels in those syllables, and the whole accompanied with expressive looks, and significant gestures.

Of the numerous instances of imperfect, or vitiated articulation, there is not, perhaps, one in a thousand which arises from any natural defect or impediment, and, consequently, not one but which might, by proper attention, be remedied. See **LANGUAGE, READING, SPEECH**.

ARTIFICER, is a person employed in manufacturing any kind of goods and wares, such as those of iron, brass, wool, &c. Of this description are smiths, braziers, and weavers.

It is provided, by various statutes, that such as entice, or seduce artificers, manufacturers, or workmen, to leave the kingdom shall, for the first offence, be fined 50*l.*, and be imprisoned three months, and for the second offence, shall be fined 100*l.* and be imprisoned two years. Captains of ships, and custom-house officers conniving at these offences, are subject to the same penalty, and become incapable of exercising any public employment. Artificers going to foreign coun-

tries, and not returning within six months after warning given them by the British ambassador where they reside, shall be deemed aliens—*forfeit all their lands and goods*—be incapable of any gift or legacy—and be out of the king's protection.

We cannot avoid observing, that these laws are at complete variance with the common sense of mankind. That they are constantly evaded is well known, and it would be greatly to the honour of Great Britain were they expunged from the statute-book.

Artificers combining together to raise the price of labour, incur the penalty of 10*l.* or twenty days' imprisonment for the first offence; 20*l.* or the pillory, for the second; 40*l.* for the third, or the pillory, loss of one ear, and perpetual infamy.

Journeyman who, in consequence of a combination, refusing to work till their wages are raised, may be indicted for a conspiracy; and if found guilty, are to be committed to gaol for any term not exceeding three months, or to some house of correction to hard labour, for any space not exceeding two months.

These are some of the penalties attached to workmen for combining to *keep up* the prices of labour, but where are our laws inflicting adequate penalties on masters for combining to *keep down* the prices of labour?

ARTIST, is an appellation given to a person skilled in some particular art, such as that of watch-making, engraving, painting, &c.

ASARABACCA, in botany, the *Asarum Europæum*, *L.* is a perennial plant, a native of several parts of England, particularly Lancashire and Westmoreland; it grows in woods and shady places, and flowers in May. The root is creeping; the stem short, round, and simple, generally bearing two leaves only, and one flower. The leaves are opposite on footstalks three inches long, of a kidney shape entire, somewhat hairy, and of a deep shining green colour.

The leaves of Asarabacca are emetic,

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cathartic, and diuretic; but they are never used in modern medical practice, except as a snuff. A proper dose snuffed up the nose for a few successive evenings at bed-time, occasions a copious discharge from the nostrils, which continues to flow for several days. It has been found particularly beneficial in head-aches, obstinate tooth-aches, and long-continued inflammation of the eyes, and lethargic affections. The dose of the powdered leaves is from three to five grains, which should be repeated every night until the full effect is produced, avoiding exposure to cold during its use.

As a great deal of the acrimony of *asarabacca* is lost by keeping, the leaves should be used as fresh as possible, and be dried without the application of much heat.

The roots, although not ordered in the British Dispensatories, contain the same acrid principle as *arum*, or wake-robin, and are violently emetic and cathartic. Their odour, which is not unlike valerian, is said to prove fatal to moles.

The fresh leaves, or roots of *asarabacca*, will produce in dyeing an apple-green.

ASAFCETIDA, or **ASSAFCETIDA**, a gum-resin, so called on account of its offensive smell. It is obtained from the root of the *Ferula assafoetida*, *L.* an umbelliferous plant, growing wild in Persia. The roots become fit to yield the *assafoetida* when it is four years old. When the stem and leaves begin to decay, they are twisted off from the root, which is exposed by digging away the earth that surrounds it; the top is cut off transversely, and, after forty-eight hours, the juice which has exuded is scraped off, and another transverse section made. This operation is repeated three successive times, or more. The juice is dried in the sun.

Asafoetida is brought to this country packed in cases, mats, or casks. It is usually in large irregular masses, which, when broken off, appear of a whitish yellow on the inside, but be-

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come, in a few hours, changed to a somewhat lively red, and ultimately to a dull reddish yellow. Its effluvia has the remarkable property, when it is fresh broken and in large quantity, of affecting the eyes exactly in the same way as the juice of the onion, to which, in its sensible properties, *assafoetida* seems to be in many respects analogous.

It is said that the plant which produces the *assafoetida* will bear the vicissitudes of our climate, and that the specimens which have been reared in our botanical gardens exhibit the characteristics of the plants which are produced in their native soil.

The Persians use it as a condiment with their food.

Asafoetida has been long in use in various medicinal preparations, and for various diseases, and has been extolled by many physicians as one of the most valuable medicines in spasmodic, flatulent, hysteric, and hypochondriacal complaints; it is said also to be found useful in asthma and whooping-cough, and that it is an extremely powerful remedy in the cure of chlorosis. Although we are not unwilling to admit that some good qualities belong to this drug, yet we have no hesitation in saying, that we believe its virtues have been considerably over-rated. It appears to us to be very nearly allied to the onion, not only in its sensible qualities, but in its medicinal effects; and although to some constitutions the exhibition of both *assafoetida* and the onion is manifestly advantageous, yet we know and affirm, that there are others, and not a few, to which the exhibition of *assafoetida* for months has had no good effect whatever; the only sensible one has been an impregnation of the body, and the clothes and bed-clothes of the patient, with that disgusting effluvia, which belongs equally to *assafoetida* and to the onion. We make these remarks, because we believe that failures from the administration of *assafoetida* are more frequent than medica-

men are willing to acknowledge, and because we would not have the general reader rely upon the powers of medicines which, although sometimes useful, are not so generally so, as they have been usually affirmed to be. We must not take for granted, that because a drug has a powerful smell, that it must be a powerful medicine. We believe that asafœtida and musk have both obtained considerable eminence as medicines, from their intense and striking smell alone: it is remarkable, that a mixture of the smells of these two drugs yields the usual smell of most druggists' shops.

The dose of this drug is from five grains to a scruple, formed into pills, or diffused in water.

ASCARIDES, in zoology, belong to the order *vermes*, worms, and are divided into eighty species, generally deriving their specific name from the animal which they chiefly infest: for the intestinal canal of most animals is affected by some species or other. We can only notice two species. 1. The thread, or maw-worm; *A. vermicularis*, which is well known. It inhabits the intestines of children, and thin debilitated adults, principally in the rectum. These worms are generally found in considerable numbers, occasioning troublesome symptoms, and often creeping into the stomach. They are viviparous, and about half an inch long. The female has a small aperture a little below the head, through which the young are protruded.

2. The *A. lumbricoides*, a long round worm: its head slightly incurved, with a transverse contraction beneath it; mouth triangular. It inhabits the intestines of emaciated persons, generally about the ileum, whence it sometimes ascends into the stomach, and creeps out of the mouth or nostrils. They are frequently very numerous and vivacious; usually from nine to fifteen inches in length, and about the size of a goose quill, sometimes larger. They are oviparous, and distinguished from the *lumbricus terrestris*, or common earth-worm, in wanting the fleshy ring

below the head, and in having three vesicles. For the medical treatment of diseases produced by this and other worms on the human body, see the article WORMS.

Ascites. See DROPSY.

ASH, or the *Fraxinus L.* is a genus of which there are fifteen species, chiefly natives of North America, or of the south of Europe, one species only common to our own country. This is the lofty ash, *F. excelsior* of Linnaeus, with leaflets slightly petioled, lance-oblong, serrate, tapering; flowers naked; capsules with an oblique emarginate tip. There is another variety, with pendulous branches.

This species, in our own country, is of rapid growth, and may be planted with great advantage. It is always propagated from seed, and is so easily reared, that it will grow almost in any place, and in any soil. It will produce good timber in about thirty years, or even a less period. It grows best in society. The timber is hard and tough, and much used for agricultural implements. It does not commonly reach a large size, yet there are instances of its having attained a circumference of fifty-eight feet in the trunk. It bears lopping and topping well; and in some parts of the country the lops and tops are given first of all to the cattle, to eat off the bark, which affords them a nutritious food. The leaves and branches of this tree are also, in seasons of scarcity, sometimes given to the cattle in the absence of grass.

The wood of the ash possesses the property of being almost uniformly good, whether the produce of young or of old trees. Its ashes afford, we understand, more potash than any other English wood in equal quantity, and the bark is employed in tanning calfskins.

Fraxinus ornus is the beautiful flowering ash of our plantations. It is a native of the south of Europe; and, as well as many other species of the ash, produces the secretion called MANNA. *F. rotundifolia*, also a native of the south of Europe, yields the same kind of secretion; and so again

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does our own *F. excelsior*, in warm climates. See MANNA.

ASH, MOUNTAIN, or Mountain Service, the *Pyrus aucuparia*, abounds in various mountain and woodland districts of England and Wales. It never arrives to a large tree; is elegant in form, of slow growth, and often reared in our plantations and shrubberies as an ornament, both for its leaves and blossoms, and, above all, for its clusters of beautiful red fruit. It may be propagated both by seeds and layers: the first is the best method.

ASHES, generally speaking, are the remains of bodies reduced by fire. There are vegetable, animal, and mineral ashes.

Metallic, and many other mineral bodies, when altered by the action of fire, have been improperly called CALXES: we shall have occasion to speak of some of these calxes, under the head OXIDE, to which we refer. See also CALX.

Animal ashes consist principally of lime and carbon, or charcoal. See HARTSHORN, IVORY BLACK, &c.

Wood ashes are obtained from a great variety of different vegetables. We have already described the properties of ALKALIES, under that term; and shall at present observe, that vegetable ashes contain a great quantity of a fixed salt, mixed with a portion of earthy matter; and that from these ashes are extracted the salts commonly called POT-ASH, PEARL-ASH, BARRILLA, &c.; of the preparation and properties of which we propose to treat under their respective heads.

In rural economy, vegetable ashes have been considered as one of the best means of fertilizing land; yet it is evident that they cannot be equally useful on every kind of soil. It is asserted that they are in general most effectual for manuring moist, cold, boggy, marshy, or uncultivated soils; but we know that paring and burning the surface of the land is now a very common practice in dry and hilly situations, and that good crops are the consequence of such manure. We know also that the

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remains of ashes, after the soap-boiler has used them, are eminently fructifying, and that the ashes of any kind of vegetable are profitable for enriching barren ground. The best season for laying them on, either for corn, pasture, or meadow, is said to be in the beginning of winter.

Peat Ashes afford an excellent manure for both corn and grass land: in some parts of Berkshire and Lancashire they are considered one of the best dressings for spring crops.

Coal-ashes may likewise be made a most useful article of manure, by mixing with every cart load of them one bushel of lime in its hottest state, covering it up in the middle of the heap for about twelve hours, till the lime be entirely slacked, and incorporating them well together; and, by turning the whole over two or three times, the cinders, or half-burnt parts of the coal, will be reduced to as fine a powder as the lime itself. The coal-ashes should, however, be carefully kept dry: this mixture will be found one of the best improvers of moorish and benty land. See COALS.

ASPARAGUS, called also Sparagus, or Sparrow-grass, is an esculent plant well known. There are twenty species, natives chiefly of the south of Europe, the Cape of Good Hope, and the East Indies. The *A. officinalis* is the only native of our own country: it is found wild on our coasts, and is cultivated with much improvement in our gardens.

This useful plant is best propagated from seed; hence some of the most promising buds should be marked with a stick, and when the seed begins to ripen, and the stalk to wither, it ought to be cut, and, the berries being rubbed off into a tub or other vessel, water should be poured upon them. After the husks, &c. have been separated from the seeds, they must be taken out of the water and dried. They should be thinly sown in the beginning of February, on a bed of rich earth; after which they should be trod into the ground, and the earth raked over them.

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During summer, the plants should be kept clear, from weeds; and about October, when the stalks appear withered, a small quantity of rotten dung should be spread over the bed, about half an inch in thickness. In the following spring the plants will be in a proper state for transplanting, when the ground should be prepared for them by trenching it, and disposing a large quantity of rotten dung in the trenches, so that it may lie at least six inches below the surface; after which, the whole plot must be levelled, and all the loose stones carefully picked out. The best situation for such beds is a south-eastern aspect, sheltered from the north, and the soil should be neither too moist, nor too firm or hard. If the season be forward, and the soil dry, the asparagus should be transplanted in the beginning of March; but in a wet soil, it is preferable to wait till the end of the month, or the beginning of April. Great care must be taken in obtaining the roots to be transplanted, that the young shoots be not broken off; to avoid which, they should be carefully raised with a narrow-pronged dung-fork. They should be planted in trenches, one foot apart, and about six inches deep, so that when the earth is raked over them, they may be two inches under the surface. A space of two feet and a half should be left every four rows, for the purpose of affording room to cut the stalks. At the time of planting, onions may be sown on the ground; after the lapse of a month, the asparagus buds will begin to appear, when the onions must be thinned, and the weeds carefully removed. In October the shoots of the asparagus should be cut within two inches from the ground, and a layer of rotten dung, about an inch or more in thickness, should be spread over the whole bed, as a protection from the winter cold, and also for succour to the plants. It will be useful to continue this practice as long as it is found necessary to continue the asparagus bed, without renewing the plants.

• Asparagus is sometimes raised in a

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hot-bed made of tanner's waste and horse-dung, and covered with glass frames; but as this is only practised by particular persons, and for those who like such expensive dainties, we shall not enlarge on this subject.

ASPEN or ASP. See POPLAR.

ASPRODEL. See DAFFODIL.

ASPHYXIA. That state of the body during life, in which the pulsation of the heart and arteries cannot be perceived. There are various kinds of asphyxia: we shall treat of them under their several heads. See DROWNING, SUSPENDED ANIMATION, CHARCOAL, FERMENTED LIQUORS, COLD, INFANTS, &c.

ASS by naturalists is classed as a species of the *Horse*.

The domestic ass is generally of an ash colour, and distinguished by a short mane; ears long and slouching; the forehead flattish; a black cross on the shoulders of the male; the female goes with young two hundred and ninety days. It lives thirty years. This animal is remarkable for his patience and tranquillity; submits with firmness to chastisement, and will live upon the coarsest food, such as other animals reject; he is, however, more particular in regard to drink, never using water unless it be perfectly pure. Of all animals he is, perhaps, capable of supporting the heaviest burthen in proportion to his size, and on account of his slow and regular pace is particularly useful in journeying over uneven grounds and mountainous countries.

The produce of a mare and a male ass is called a *mule*; of a horse and a female ass a *hinny*. See MULE.

ASSES' MILK is preferred to cows', and other kinds of milk, in consumptive cases, and where the stomach is weak, as it is of so thin a consistence as to afford neither butter nor cheese. Adult patients as well as young children, are usually directed to drink it warm from the animal three or four times a day, about half a pint at a time, and to be continued for several weeks, or even months. But we confess our apprehensions, that the patient

who relies for cure, or even much relief, from this diet, will be often disappointed ; still, however, where other means have failed, this may be tried : that it has sometimes been of service there can be little doubt.

ASSEMBLY, in general, signifies a meeting of several persons in the same place, and for a common purpose. All public meetings, when conducted with a spirit of order and decorum, are highly conducive to polish the manners of a people ; but the frequent visiting of such places, where the rooms are crowded, and where some of the company might be, perhaps, afflicted with diseases which vitiate the air, must be attended with pernicious effects, even to the most healthy, and ought, by all means, to be avoided.

ASSIMILATION, in the animal economy, is that hidden natural process by which, in living beings, certain bodies, such as food and drink, are converted into the same substance or nature of which the animal is composed. See **CHYLE**, **DIGESTION**, **NUTRITION**, **SALIVA**.

Assurance. See **INSURANCE**.

Aster-china. See **CHINA ASTER**.

ASTHMA is a spasmodic disease of the organs of respiration attended with cough, difficulty of breathing, wheezing, &c. It is sometimes hereditary, seldom appears in early life, and chiefly attacks males.

There are two distinct species of this disorder, each of which require a different treatment. When it is attended with an accumulation and discharge of humours from the lungs, it is called *humid asthma* ; when the patient is not troubled with coughing, or at least, has no expectoration, it is termed *dry asthma*.

The paroxysms commence with a sense of straitness in the chest, and tightness impeding respiration, and a cough ; the attacks are generally in the night. The patient cannot lie in a horizontal posture without danger of suffocation ; and when seized, is obliged immediately to sit upright. The difficulty of breathing increases with a

violent wheezing ; after continuing, in the same state for some hours it becomes less difficult and oppressed, the cough is easier, and an expectoration of mucus taking place, the paroxysm abates till the next night, but the symptoms continue in a greater or less degree in the day time, varying from the weather, and other circumstances. It is generally accompanied by some symptoms of indigestion ; and, indeed, can be sometimes traced as the effect of other complaints, in which the digestive organs have, either primarily or secondarily become affected. The pulse often remains regular and undisturbed, though, sometimes, symptoms of fever attend the fit. The urine is at first pale ; but when the remission takes place, it frequently become high coloured, and deposits a sediment. The attack is sometimes induced by external heat, at others by cold ; but in either case the sudden accession will sufficiently distinguish the asthma from symptomatic shortness of breath. But, in the former case, it is often succeeded by a confirmed pulmonary consumption ; and, after a long continuation, generally terminates, either in dropsy of the breast, or an aneurism of the heart, or arterial system. A tremulous respiration, paralysis of the arms, and a diminution of the urinary secretion are unfavourable symptoms.

This is one of those chronic diseases which may continue for a considerable number of years ; and as every thing which tends to lessen the cavity of the chest, and obstruct the free motion of the lungs deserves the greatest attention, it is of the first importance in every stage of this disease, to attend to the state of the general health, and particularly to that of the stomach ; hence all flatulent, and other food liable to ferment and produce distention and acidities should be religiously avoided ; nor is it a trifling consideration, that those persons who are subject to asthmatic complaints should keep their bowels regular, or somewhat lax, by aloetic, or other evacuates, which are not debilitating. We men-

ASTHMA

tion this, because we believe it is not usually insisted upon by medical practitioners, and because we are also convinced of the value of such advice as a preventive of the disease, or of the paroxysms, when once they have assumed their periodical or irregular attacks.

In order to obtain relief in *the fit*, bleeding is sometimes of service, but it is necessary to be cautious in the use of the lancet in this disease; extreme weakness, or old age, totally forbid its use. A purging clyster, containing a solution of asafœtida, is sometimes injected; if the violence of the symptoms do not speedily abate, a blistering plaster may be applied to the neck or breast. Previously to a fit emetics are found useful, especially when the stomach is foul. In the intervals, *lac ammoniacum*, vinegar of squills, asafœtida pills, and other similar medicines, may be usefully employed. A strong infusion of roasted coffee has, in some instances, been found a good remedy to abate the paroxysms: the best Mocha, newly roasted, and used immediately after being ground, one ounce to a cup, to be repeated after the short interval of a quarter or half an hour, and taken without milk or sugar, is to be preferred.

In a violent paroxysm of asthma, from the effects of which there is imminent danger of suffocation, an emetic is sometimes advisable, as vomiting tends to produce immediate relief. But this remedy should only be resorted to when there is no symptom of inflammation apparent; and when the humid matter in the thorax is loose and ready for expectoration, which may be ascertained by a free rattling in the throat; when respiration itself is not extremely impeded; and when the patient's strength is not too much exhausted. However, the administration of an emetic, at all events, requires extreme caution. A judicious practitioner will, in such cases, not hesitate to give a brisk dose, in order most speedily to produce the desired effect, to prevent an unnecessary exhaustion of the con-

stitution. This observation must evince the importance of every step in the exhibition of medicines, and the practice of physic; and, although we think that there is considerably less mystery in medicine than the majority of its professors would have the public believe, yet, neither officious friends, nor mercenary pretenders, are the most proper persons whose service can be useful on such, or similar occasions.

Besides what we have before stated, we may observe, that in the *periodical* asthma, infusions of bitter herbs, such as wormwood, lesser centaury, the blessed thistle, and camomile flowers; as well as gum ammoniac, vinegar, and honey, acids in various forms, and mixed with proportionate quantities of tincture of opium, have been used with success. The exercise of riding on horseback is of great importance. We believe it may be stated as a fact, that almost all large and smoky cities are unfavourable to asthmatic complaints, and that country air is decidedly advantageous: there are, however, occasional exceptions. But attention to food and drink in this disease is, at all events, indispensable. Nothing of either kind which produces flatulence should be taken: hence, all kind of malt liquors and poor wines should be positively interdicted. Water is the best liquid to be taken with the food; a glass or two of Madeira, or weak spirit and water, *after* dinner, are the best stimulants. See APPETITE.

The *dry*, or spasmodic asthma, during the extreme violence of the fit, is best relieved by opiates, and sometimes very large doses are required. But, in order to obtain permanent relief, nothing is found to answer better than *ipercacuanha*, in small doses; three, five, eight, or ten grains, according to the constitution of the patient, given every other day, have been productive of the happiest effects. Issues are generally recommended in both kinds of asthma, and will often be found useful. Smoking the leaves of stamonium in the manner of tobacco, has been lately adopted with good effect in the pa-

roxysms of spasmodic asthma. See THORN APPLE.

ASTRINGENTS are those substances which act upon the animal fibres, by contracting them, and increasing the force of cohesion. They impart a sense of dryness to the taste, and a remarkable corrugation in the parts on which they immediately act. They are administered to restore loss of action, to correct some secretions which are unduly increased, such as those in diarrhœa; and also some hemorrhages, such as bleeding at the nose, wounded blood vessels, &c. The following are some of the principal astringents: ALUM, OAK-BARK, PERUVIAN BARK, GALLS, the RED ROSE, ALCOHOL, ACIDS, KING, LOGWOOD, COLD AIR, COLD WATER, SULPHATE OF IRON, and almost all the different preparations of this metal, &c. &c.

ASTRONOMY implies a knowledge of the celestial bodies, their magnitudes, motions, distances, periods, eclipses, and order. It is unquestionably the most sublime of all the sciences.

The origin of the science of astronomy has been ascribed to different persons, nations, and ages; but on this head nothing can be accurately determined. It is probable, indeed, that mankind in the earliest ages of the world, would endeavour to acquire a knowledge of the motions of the heavenly bodies, not only from curiosity, but, because some parts of the science answer such essential purposes as to make the cultivation of it a matter of necessity. Accordingly we find traces of it in different degrees of improvement amongst almost all nations of the earth.

The Chinese, the East Indians, the Arabs, the Greeks, were well acquainted, at a remote period, with many facts in this interesting science, but PYTHAGORAS was the first amongst the ancients who maintained that the Sun was the centre of the universe, and that all the planets moved in elliptical orbits round it. This was, indeed, at the time, supposed chimerical and impro-

bable, till the inquiries of the sixteenth century, and particularly those of COPERNICUS, proved it to be true and uncontestable. Since that period astronomy has been progressively cultivated by different nations, especially the Germans, Italians, French, and English. A galaxy of great men might be mentioned who have contributed to the improvement of this beautiful science, amongst whom GALILEO, SIR ISAAC NEWTON, and SIR WILLIAM HERSCHEL, are the most eminent.

Athletic ART. See GYMNASTIC EXERCISE.

ATHLETIC Habit, a term which implies a strong constitution of body. Among the ancients it signified a robust and corpulent state, such as the *athletæ*, or wrestlers, endeavoured to acquire. The athletic habit is considered as the highest point of health.

ATMOSPHERE, the gaseous or æriform fluid which every where surrounds the surface of the terraqueous globe, and probably that of the other planets. The terrestrial atmosphere imports the whole of the fluid mass, consisting of air, aqueous, and other vapours, the electric fluid, &c., which surrounds the earth to a considerable height, and partakes of all its motions, both annual and diurnal.

We have already mentioned the general properties of this surrounding medium, under the article Air; we may add here, that, according to the discoveries of modern chemists, the atmosphere is not a simple but a compound body. Pure air, or *oxygen*, forms about a fourth part of its composition, whilst *azote*, or *nitrogen*, constitutes about three-fourths. The third constituent part of the atmosphere is *carbonic acid gas*, which is in so small a proportion, as to form only a hundredth part of the whole. See CARBONIC ACID and BREWING.

It appears, notwithstanding the fact that an animal can live much longer in *oxygen* than in atmospheric air, that atmospheric air is, upon the whole, the best pabulum of animal life; and there can be no doubt that atmospheric air,

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freed from the smoke and other effluvia of large cities, is to be preferred: in other words, that the air of the country is better than that of towns and cities. And although the chemists constantly assure us, that the most accurate analysis of the air of crowded towns and of the open country gives the same constituent results; yet we are warranted by facts in concluding, that there are some hidden and injurious properties in the atmosphere of such towns, which chemical analysis has not yet been enabled to detect, but which are manifestly injurious to health.

ATROPHY, or nervous consumption, is a disease attended with emaciation and weakness, without any remarkable fever, cough, or difficulty of breathing, but attended with want of appetite, and a bad digestion, whence the whole body grows languid, and wastes by degrees.

This disease sometimes arises without any evident cause, but it arises more frequently from passions of the mind; from an abuse of spirituous liquors; from excessive evacuations, particularly of the semen, in which case it is termed *tabes dorsalis*. It also arises from mere old age, or from famine. It is very difficult of cure, and often terminates in dropsy.

The mode of treatment of this disease must very much depend upon the cause by which it is induced, and it is almost unnecessary to add, that this must be removed as far as possible. Next to this, the use of nutritious food must be carefully attended to. From the condition of the stomach, commonly attending this disease, it is necessary that a small quantity only should be taken at a time, and that it should be frequently repeated. Stomachic medicines are in this case of great service. The Peruvian bark, sulphuric acid in a diluted state, and the preparations of iron, are excellent. Gentle exercise, and the pure air of the country, will be of considerable importance. In that species of this disease occasioned by venereal excesses, it is so essentially necessary to abstain

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from them, that without it the best remedies will prove altogether useless; and this is so seldom complied with, that the *tabes dorsalis*, we are sorry to say, frequently proves mortal.

ATTENUANTS, or attenuating medicines, are such as have a tendency to subtilize or resolve the humours into finer parts.

ATTENTION is a due application of the ear, the eye, or the mind, to any thing said or done, in order to acquire a knowledge thereof. Attention and application are so very similar, that we do not feel it necessary here to repeat our observations, which will be found under the latter word; but we earnestly recommend, notwithstanding, those observations to our reader's attention, feeling assured, that to **APPLICATION** and **ATTENTION**, in an emphatic sense, we are indebted for the best knowledge which we possess, not only in the sciences but in morals, and that the person who is deficient in such essential qualifications can never make much progress in either the useful or ornamental arts, or sciences of any kind.

ATTORNEY signifies any one who is appointed by another to transact any business for him in his absence.

ATTORNEY AT LAW is a person who manages the *Law* business of another, for whom he is employed. Attorneys are admitted to the execution of their office by the superior courts at Westminster Hall. They are considered as officers of the respective courts in which they are admitted, on which account they enjoy many privileges; and are peculiarly subject to the censure and animadversion of the judges.

The business of an attorney is one of the most important which can engage the attention of a conscientious man, in the present state of society. To him the oppressed repair to learn by what means the oppressor is to be resisted; to him the orphan and the friendless look, as to one who knows how to direct them to recover their property or their rights. The attorney it is to whom, as a *Conveyancer*, in preparing deeds, bonds, mortgages, marriage settle-

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ments, &c. we confide the transfer and security of our monies, our goods, and our estates. It is the attorney before whom we lay those documents, upon his opinion of which we buy and sell lands, houses, and a variety of other property, depending more especially upon what is usually called the *Title* to their possession. By these means it is the attorney who has an opportunity of knowing the most intimate affairs of individuals, in every situation of life; and it is the attorney, thus invested with so much power, who has an opportunity of becoming either a blessing or a curse to the neighbourhood in which he resides; for such is now the complexity of our laws, that it is scarcely possible for a plain and simple-minded man to meddle with them, without having his attorney at his elbow, unless he choose to run the great risk of being overthrown and defeated, even in the best of causes. If, therefore, instead of that manliness and integrity which should dignify an attorney, he abuse the confidence reposed in him, and descend to the low and petty arts of fomenting litigation and strife between contending parties, for the mere purpose of filling his own pocket, or to gratify the malignity of some tyrant of power, it is evident that there is no term in language sufficiently strong to designate the man. If, on the contrary, an upright man, well acquainted with the laws and their forms, but knowing the fallibility of human nature, and the fallible nature of testimony too—if such a man should be an attorney, how much strife can he not prevent, how much misery and distress can he not cure!

Attorneys have the privilege to sue and be sued only in the courts at Westminster, where they practice.

Besides the obligations of fidelity to his client, the attorney owes him secrecy; and in certain cases an action lies at the suit of his client for neglect of duty: but such actions are extremely rare.

The stamp duty for the articles for an attorney's clerk, in order to have

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admission to the courts of law, is one hundred and ten pounds; and every attorney and solicitor must annually take out a certificate from the courts in which they practice, for which stamp duties are paid.

AUCTION, a public sale, where goods, lands, houses, &c. are exposed to be bid for, and where the highest bidder becomes the purchaser. Sales by auction are regulated by various acts of Parliament.

A bidder at an auction may retract his bidding at any time before the hammer is down.

The duties on goods, &c. sold by public auction, and payable to the Excise, are on

Any interest in possession, or reversion, in any freehold, copyhold, or leasehold *lands, tenements, or hereditaments*;—on any *share or shares* in the *capital or joint stock* of any corporation or chartered company;—on any annuities; or any sums of money charged on *annuities*;—on *ships and vessels*;—on any *reversionary interest* in the public funds;—on plate and jewels, **SEVEN PENCE** in the pound:—

On furniture, fixtures, pictures, books, houses, and carriages, or any other goods and chattels whatsoever, not specifically named in this or the preceding duties, **ONE SHILLING** in the pound.

Sales of cattle, live or dead stock, and unmanufactured produce of land, by the proprietors or their agents;—prize ships and their cargoes, sold for the benefit of the captors;—goods or ships stranded or wrecked, sold to pay salvage charges, or for the benefit of the owners or underwriters;—sales by order of the Court of Chancery or Exchequer;—by the East India Company;—Hudson's Bay Company;—Commissioners of Customs or Excise;—Board of Ordnance;—Commissioners of the Navy or Victualling;—by the Sheriff, in execution of judgments;—goods distrained for rent, or non-payment of tithes;—goods and effects of bankrupts, by order of assignees, are *exempt* from the duties on auctions.

A variety of other merchandize is exempt under particular circumstances, but we cannot specify them.

AUCTIONEER is an agent lawfully authorised to sell goods, estates, &c. by auction, for which he must take out an annual licence at the Excise office, the duty for which is twelve shillings.

AUSTIN'S PILLS. See *Iron, Compound Pills of.*

AUTUMN is reckoned the third season of the year. It begins about the 22d day of September in our northern hemisphere, and ends about the same day of December; and, with respect to the animal body, is doubtless the most unhealthy: one reason for which, amongst others, is, that the vegetable kingdom, with very few exceptions, returns the salubrious leaves of trees and plants to the earth, where they undergo spontaneous decomposition. This decay, or process of putrefaction, produces a remarkable change in that surrounding medium which supports animal life. The animal system, towards the close of summer, appears also to suffer a loss of action, even previously to the fall of the leaf; hence arise bilious and putrid fevers, with various other complaints, according to the constitution and particular circumstances of the individual. Nature, however, seems to have provided us with the means of obviating such disastrous effects, in the stores of sub-acid fruit, and acescent vegetables, which at this season attain to perfection, and are well qualified, when used discreetly, to counteract the putrid disposition of the animal fluids. An attention to diet and clothing, at this season of the year, is indeed of the first importance: our fair readers ought in particular to be upon their guard against the alluring effects of a warm day, and the cold of the night—against the allurements and dangers of muslin and cotton, as opposed to the safety of dresses of woollen in all their variety. See **EDUCATION**.

AVARICE is that restless and insatiable desire of accumulating riches,

which is the surest indication of a contracted, and generally of a depraved mind. When a person donates upon money merely for the sake of possessing it, without any regard to the good purposes of life which it might serve, or to the new enjoyments which might be procured by it; without any regard to the benefit of his neighbour, or to any advantage accruing from it to himself, such a being may justly be called a miser of the first class. There are several other classes of misers, which we have neither room nor inclination to enumerate, but we may observe generally, that avarice has a tendency to stifle every spark of sympathy and generosity in the human mind; that it tends to make men both cruel and unfeeling; and that even savage nations, for instance the Canadians, are said to bestow the greatest care on the minds of their children, to prevent the growth of this vile and degrading passion.

AVENS, or *Geum*, *L.* a genus of plants, comprehending eleven species, of which two only are natives of this country: the *Common Avens* grows in woods and shady hedges, and produces yellow flowers from May to August. The stalks of this plant attain a height of two feet. In spring, its root possesses the aromatic flavour of cloves: it has been employed in America in the cure of intermittents, and is said to be more efficacious than the Peruvian bark. It has been given in tincture, in decoction, in powder, or electuary. Four ounces of the root to a quart of brandy is the usual proportion for the tincture, the dose of which is half an ounce, or more. The dose of the root in powder is from one scruple to a drachm.

The *Water Avens* grows also in various parts of England. The leaves and root of this species have been employed in medicine, as well as in tanning.

AVOIRDUPOIS WEIGHT, a weight used in England for weighing almost every kind of goods, except gold, silver, jewels, some scarce and dear drugs, such as musk, and for compounding medicines.

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Avoirdupois weight is thus divided :

16 drachms make	1 ounce,	marked	oz.
16 ounces	—	1 pound	— lb.
112 pounds	—	1 hundred weight,	cwt.
20 hundred weight	1 ton	—	ton

The avoirdupois ounce is less than the *Troy*, in the proportion of 700 to 768; but the avoirdupois pound is greater than the troy pound, in the proportion of 700 to 576:

For 1 lb. avoirdupois	is = 7000 grains troy,
but 1 lb. <i>troy</i>	is = 5760 grains troy,
also 1 oz. avoirdupois	is = 437½ grains troy,
and 1 oz. <i>troy</i>	is = 480 grains troy.

The first statute that directs the use of the avoirdupois weight, is that of 24 Henry VIII. which plainly implies, that it was no legal weight till sanctioned by that statute; the particular use to which the said weight is thus directed, is simply for weighing butchers' meat in the market. After this, it gradually grew into general use, for weighing such goods as are very coarse and drossy, or subject to waste. See **TROY WEIGHT, and WEIGHTS and MEASURES.**

Aversion. See **ANTIPATHY.**

AWARD is the judgment and arbitration of one or more persons, at the request of two parties who are at variance, for ending the matter in dispute without public authority. The submission to an award may be by bond, covenant, or by an assumpsit, or promise; or, without all this, by a bare agreement to refer the matter to such a person or persons.

An award is undoubtedly one of the best means of settling matters in dispute between opposite parties, provided the parties interested take care that their arbitrators are *competent to the task which they have undertaken, and are also willing to bring the affair to a final termination, and in a limited time.* We advise those persons who are desirous of settling affairs in dispute in this way, to be very cautious in this

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respect; and to take care also, in case the arbitrators cannot agree, that a power of choosing an umpire be vested in them, so that a final decision may be ultimately obtained. We advise them, above all, to take care that no lawyers or attorneys interfere to puzzle the understandings of men of common sense, with idle precedents and inapplicable statutes. In order, however, to make an award binding and irrevocable, the instrument called an *Award* should be drawn up by some person who understands the law; and therefore, although we advise those who agree to an award, to avoid the interference of lawyers, yet we think it would be unsafe to trust the drawing up of an agreement of award, except to a legal practitioner.

AZOTE, or NITROGEN, is never found completely separated from every other substance, except in the state of gas. It is considered as a simple body, never having been decomposed, and is incombustible. It is somewhat lighter than atmospheric air, of which it forms about three-fourths. It exists abundantly in nature, is the peculiar and almost characteristic ingredient of animal matter, the basis of the nitric acid, and one of the constituents of ammonia: it is capable of indefinite condensation and expansion, like atmospheric air: it immediately extinguishes a lighted candle, and all other burning substances; hence the reason why a candle is extinguished in atmospherical air, as soon as the oxygen in it is consumed. It has no sensible taste, but is exceedingly noxious to animals; if compelled to inhale it, they drop down dead almost instantly: some plants, however, live in it, and even flourish. See **AIR and ATMOSPHERE.**

For the mode of treatment of those persons who are apparently dead from an inhalation of this air, see the articles **CHARCOAL and CARBONIC ACID.**

B.

BACHELOR, a man not married, or who is yet in a state of celibacy. The state of a bachelor has been generally attended with more or less opprobrium in most civilized countries, and laws have been occasionally enacted to make that state more irksome. In England, at the present time, in some cases of the *assessed taxes*, a bachelor pays double. We doubt, however, the propriety of such laws; at the same time we must observe, that bachelors are, in too many instances, devoid of some of those soothing attachments and charities which soften and ennoble human nature: bachelors appear to be actuated by a supreme love of self; they shut themselves up in the citadel of their own individual enjoyment, and exclude or suppress those emanations of mind, and those kindly attentions and support to their fellows, and more especially to the female sex, which, fortunately for our species, comparatively few men are disposed to do. We are sorry, however, to be obliged to remark that, in Great Britain, at present, the disposition to celibacy amongst men seems on the increase. The causes for this are, perhaps, not difficult to be shown, but the nature of our work prevents our enlarging.

BACK-galled, of a horse. Accidents of this kind ought never to occur, because it is almost always a consequence of inattention in those who have the management of the saddle or harness. When, however, any swelling or tenderness is observed about the horse's back or shoulder, let it be frequently bathed with a lotion, composed of half an ounce of Goulard's extract, four ounces of vinegar, and one pint of water. If the skin has been bruised

so as to cause a sitfast, or hard dark-coloured scab, let it be rubbed twice or three times a day, with camphorated mercurial ointment, until it is loosened sufficiently to be taken off. When the scab is removed, dress the sore twice or three times with a mixture of burnt alum and red precipitate, and afterwards with the following ointment: Saturnine ointment four ounces, finely powdered alum one ounce, mix them together. No application can be of service to the galled back, if the pressure which originally produced it continues; in such cases, troublesome abscesses may form, and it is often from such cruel negligence that fistula in the withers is produced.

BACKING of a Horse, a term used for the first time of mounting a colt, or taking seat upon the saddle, after he has been previously handled, quieted, accustomed to the bit, saddle, &c. Opinion and practice have very much varied relative to the age most proper for backing a colt, or even taking him in hand. Half a century past colts were rarely handled till rising four, backed and brought into gentle use when rising five, and never employed in constant work till quite six years old. But, by erroneous haste, we now find colts handled at two, broken in and racing at three, and in constant work at four in every part of the kingdom; in consequence of which, horses may now be seen at five, six, and seven years old, more impaired in their powers than they formerly were at double that age; and maimed with strained splints, wind-sinews, swelled legs, galls, and other ailments.

BACON, the whole exterior skin and fat immediately beneath it of a pig,

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(except those parts which are separated with the legs) first thoroughly impregnated with salt, and afterwards dried in a chimney, over a baker's oven, or in a drying house.

The counties in England noted for bacon, are Yorkshire, Hampshire, Berkshire, Wiltshire, and Somersetshire. The bacon of this last county has been particularly extolled in some of the Encyclopædias, but we think unnecessarily so. That which is cured in the neighbourhood of Bristol, in both Gloucestershire as well as Somersetshire, is certainly very good; arising, we believe, principally, from the hairs being singed off the skin of the pig with burning straw, or some such combustible material, which communicates a peculiar flavour to bacon, not to be obtained by any other means: this process is not, however, peculiar to either of these counties. In the midland and lowland districts of Somersetshire the hairs are usually cleared from the skin by boiling water; a practice which has cleanliness to recommend it, but the flavour obtained by singeing is totally absent.

The following is said to be one of the best methods of preparing bacon. The sides or flitches are to be laid in a wooden trough and sprinkled all over with bay salt; in which state they are left for twenty-four hours to drain away the blood, and the superfluous juices. After this they must be taken out, wiped very dry, and the drainings thrown away; next some fresh bay salt, well heated in a large iron frying-pan, is to be rubbed over the meat, until it has absorbed a sufficient quantity; this friction is to be repeated four successive days, while the meat is only to be turned every other day. If the flitches are large they should be kept in brine for three weeks, and during this period turned ten times, then taken out and thoroughly dried in the usual manner. For the method of curing hams, see HAM.

The nutritive qualities of bacon are of a very low order. The healthy and robust, and those who take plenty of

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exercise in the open air will, no doubt, find this a suitable article of food, but to the sedentary and studious persons, whose digestions are weak, or who are troubled with flatulencies, acidities, and other symptoms of dyspepsia, bacon is a most improper food; and, although *fried eggs* and *bacon* are, with many, a favourite dish, yet to those whose stomachs are disordered, perhaps a worse can hardly be recommended.

BADGER, an animal resembling in its external character, both a dog and a hog; it is now seldom met with in England,

Besides affording a coarse food, the skin of this animal makes excellent knapsacks, covers for travelling trunks, saddles, &c. because it is impervious to rain, and stands in need of no additional preparation to render it *water-proof*. The hairs or bristles of this animal are used for painters' brushes; its fat is also used for several purposes.

BAG, in commerce, is a term for a sack or pouch, containing a certain quantity or weight of some particular commodity. Thus a bag of almonds is about 300lb.; of aniseeds from 300 to 400 lb.; of hops about $2\frac{1}{2}$ cwt. &c.

BAGNIO, an Italian term, signifying *bath*: in England it denotes a house appropriated to bathing, sweating, and cleansing the body; but sometimes also for worse purposes.

BAIL, in law, the setting at liberty one arrested or imprisoned upon a suit, either civil or criminal, upon sureties taken for his appearance at the day and place assigned. He who is bailed by two or more men, is always accounted by law, to be in their ward and custody for the time, and they may, if they please, actually keep him in prison. In civil cases every defendant is bailable; but in criminal matters it is otherwise. No justice of the peace can bail upon an accusation of murder, or of manslaughter, if the prisoner be clearly the slayer, nor of felony against those who have broken prison, &c. &c. But the Court of King's Bench or any

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judge thereof in time of vacation, may bail for any crime whatever, except those who are committed by either house of Parliament, or such as are committed for contempts, by any of the King's superior Courts of Justice.

BAITING, a practice derived from the barbarous ages, and one of those amusements which degrade the human character. Thus we hear of the baiting of bulls or bears, by bull-dogs with short noses, that they may take a firmer hold of their opponent. Whatever may be urged in justification of bull-baiting, or of the baiting of any other animal, such criminal games must be decidedly condemned; for they unquestionably tend to demoralize and brutalize the human mind.

BAKER, a person whose business is that of baking and selling bread. The origin of this trade is not easily ascertained. It is certain, however, that the first public bakers appeared in the east, and passed from Greece to Italy, sometime previous to the christian æra. Prior to this period every house-wife baked her own bread. No great care was taken in ancient times to bake bread: the hearth of the fire was commonly used for the purpose. This method is still adopted by the poor and lower class of farmers in many parts of England. The ancients laid upon the hearth a piece of flattened dough and covered it with hot ashes, under which it remained until it was sufficiently baked. In England, at the present time, an iron pot is inverted over the loaf intended to be baked, and placed upon the hot hearth, and hot ashes are placed around and upon the pot. See **BREAD**.

BAKING is the art of converting flour, or other farinaceous substances, into bread. See **BREAD**.

BALANCE, one of the six simple powers in mechanics, principally used for determining the equality or difference of weights, in such bodies as are liable to this mode of computation. There are two kinds of balances principally used at present; the ancient, or the Roman steel-yard, and the modern,

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which consists of a lever or beam suspended exactly in the middle, having scales or basons attached to each extremity.

BALDNESS, a defect of hair, chiefly on the fore part of the head: it is peculiar to men; women in the most advanced age, although their hair becomes white, being seldom affected with this disease.

Among the predisposing causes of baldness, excessive indulgence in sensual gratifications, and particularly in wine and spirits, is, perhaps, the principal; although old age usually causes the loss of hair, even in the most regular livers.

Baldness is usually incurable, when it arises from general debility; but when it takes place in consequence of acute diseases, or during a tedious recovery from malignant fevers, the growth of the hair has been frequently promoted by the following liniment: take of the expressed juice of burdock root, honey, and proof spirits, of each one ounce, mix them together, anoint the barren part of the head several times a day; at the same time taking care to cover it with a soft flannel, in order to promote perspiration.

Our readers cannot be too much on their guard against the puffing advertisements for the cure of this malady.

BALL, in a general sense, is a round or spherical body, whether formed by nature or art. But as this term is used in a great variety of significations, we can here introduce only those applied to domestic and economical purposes.

BALLS, in polished circles of society, are those nocturnal assemblies devoted chiefly to the entertainment of dancing; and where these amusements are not indulged in to a late hour, nor offend, in other respects, good manners, their moderate enjoyment is advantageous to health: but excess in these, as, indeed, in almost every other amusement, is both corporeally and mentally injurious.

HORSE BALLS, among farriers, are given only for the purpose of conveying

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into the stomach of the horse, the more disagreeable drugs, which he will not easily swallow in drenches. They should not exceed the size of a pullet's egg, and should be elongated, or rather made cylindrical; when they are given they may also be dipped in sweet oil previous to their administration, which will cause them to pass down the throat with greater facility. See FARRIERY.

PORTABLE BALLS for removing spots from clothes in general, may be thus prepared: take fuller's earth perfectly dried, so that it crumbles into a powder; moisten it with the clear juice of lemons, and add a small quantity of pure pearl-ashes; knead the whole carefully together, till it acquires the consistence of a thick elastic paste; form it into convenient small balls, and dry them in the sun. They are to be used thus: first moisten the spot on your clothes with water, then rub it with the ball, and let the spot dry in the sun; after having washed it with pure water, the spot will entirely disappear.

BALLS, Fuel. See **COAL BALLS**.

BALM, *Melissa officinalis* L., is a perennial plant, a native of the south of Europe, and flowering from July to September. It is cultivated in our gardens. The recent plant has an agreeable odour, which is lost in drying; and an austere slightly aromatic taste. In distillation with water it yields a small portion of a yellow essential oil, on which its odour depends. In some districts of Great Britain, the country people rub the interior of beehives with the bruised green herb, previously to placing them over the recent swarms, in order, as they suppose, that the bees may more readily attach themselves to their new habitations; hence this plant has been sometimes called *bees' balm*.

Balm is stomachic and diuretic. It was formerly prized as a corroborant in hypochondriacal and nervous affections, but it is now only used in the form of tea, as a grateful diluent in fevers.

There are also two indigenous species of Balm, the *reddish bastard*, and the

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purple and white balm, flowering in May and June. The latter affords ornamental flowers, but neither are of any importance in medicine.

BALSAM, a beautiful annual flower, a native of India. The *Impatiens balsamina* of L. There are several varieties of this flower; it is common in our green-houses, and arrives to great perfection in the windows of our dwelling houses, to which it is a great ornament.

The best method of rearing this plant is to sow the seeds in a hot-bed in the month of April, and towards the latter end of May, or beginning of June, to transplant the plants into pots, and place them in a window, or the green-house; where they can, after being transplanted a few days, have plenty of sun.

The flowers of this plant afford little or no smell. It is said that the Japanese employ the juice of them to die their nails red.

BALSAM, a fluid, odorous, combustible substance, but generally thick and viscous; many of the balsams communicate a sweet taste to water, and contain concrete acid, which may be obtained from them by sublimation or decoction.

BALSAM OF CANADA is one of the purest turpentine procured from the *pinus balsamea* of Linnæus, and imported from Canada. Its medical properties are, of course, of the same nature as other turpentine, which see.

BALSAM OF COPAIVA is of a pale yellow colour, of a moderately agreeable smell, and a bitterish biting taste, which remains a long time in the mouth. The tree which produces it is a native of South America, and the Spanish West India Islands. This balsam, when pure, dissolves totally in rectified spirits of wine, but it is frequently adulterated in this country with oil of almonds.

It is stimulant, diuretic, and gently purgative. It seems to be peculiarly adapted for complaints of the urinary passages; it has therefore been successfully used in gleet. It is also

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equally efficacious in fluor albus, and that state of the uterus, sometimes occurring on the final cessation of the menstrual evacuations, accompanied with a sanious discharge, great bearing down, and many of the symptoms of incipient cancer. It affords also considerable relief in hæmorrhoidal affections. In too large doses it excites inflammation of the kidneys; and its use should always be avoided when ulceration of these organs is suspected.

The dose is from ten drops to thirty, twice or thrice a day, either dropped on sugar, or mixed with soft distilled water, by means of the mucilage of gum arabic, or the yolk of an egg.

BALSAM OF GILEAD is obtained from a tree, the *Amyris Gileadensis*, a native of Abyssinia, but procured generally from Gilead in Judea, whence its name. It is used as a cosmetic by the Turkish ladies; but its virtues are of little esteem in the medical world.

BALSAM OF PERU. The tree which produces this balsam is a native of the warmest provinces of South America. Balsam of Peru has a fragrant aromatic odour, much resembling that of benzoin, with a warm bitterish taste, leaving a slight sensation of burning in the throat after it is swallowed, with some degree of sweetness. It is viscid, of a dark reddish colour, or rather blackish colour, of the consistence of fluid honey. It dissolves both in ether and rectified spirits of wine.

Its medical properties are stimulant and tonic. In chronic asthma, and old obstinate coughs, it has been found useful. In many cases of debility, in gleets, leucorrhœa, palsy, chronic rheumatism, it has proved beneficial. It may be given to the extent of one fluidrachm for a dose; but the more usual dose is from ten drops to thirty, on a lump of sugar. It is also employed advantageously for cleansing and stimulating foul and indolent ulcers; a mixture composed of one drachm of this balsam, and three drachms of ox gall, has been found

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extremely useful in foetid discharges of the ear, when dropped into that organ, previously syringed with a solution of soap in water.

BALSAM OF SULPHUR, called by the London College *sulphurated oil*, is about the colour and consistence of treacle; it is stimulant, and externally detergent. It was formerly recommended in catarrh, asthma, and other affections of the lungs, but its internal use is now properly exploded. It is sometimes still externally applied for cleansing foul ulcers. Its dose, when taken internally, was from five drops to thirty, taken in water, or dropped upon sugar.

There is also another balsam of sulphur sold in the shops, called *Anisated Balsam of sulphur*, which is made merely by adding a small portion of the essential oil of aniseed to the common balsam, in the proportion of about one ounce of oil, to a pound of the latter. It is used sometimes internally for the same complaints as the simple balsam; its exhibition is, however, principally confined to the lowest vulgar, and to quacks.

BALSAM OF TOLU. The tree from which this balsam is obtained, is a native of South America, growing in the province of Tolu. Balsam of Tolu has an extremely fragrant odour, and a warm somewhat sweetish taste; of a yellow reddish colour, and of a thick tenacious consistence, becoming solid and brittle by age. It dissolves wholly in rectified spirits of wine.

It is stimulating and expectorant. A syrup and a tincture are kept of it in the shops; and it is also an ingredient in the compound tincture of benzoin. It forms an elegant addition to more active medicines, in asthma, and chronic coughs; and on the whole is perhaps more employed on account of its agreeable flavour, than for its medical efficacy. The dose of the balsam may be from five grains to half a drachm, mixed with water by means of mucilage of gum arabic, or the yolk of an egg.

BALSAMICS, a term generally ap-

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plied to substances of a smooth and oily consistence, which possess emollient, sweet, and generally aromatic qualities.

BALSAMINE, or Touch-me-not, the *Impatiens noli tangere* of L. is a plant of a poisonous nature, growing in moist and shady places, especially in the north of England, and in Wales. Its stalks are about eighteen inches high, and its yellow flowers appear in August. The capsules of this plant, when touched by the hand, burst, and throw out their seeds with velocity; whence its name. Its seeds produce violent purging when swallowed inadvertently, especially by children, and inevitable death, when taken to any extent.

BANDAGE, in Surgery, a fillet or roller, used in dressing and binding up wounds, restraining dangerous bleedings, and in joining fractured or dislocated bones. Tight bandages are however generally to be avoided. See **FRACTURES**, **LIGATURES**, and **TOURNIQUET**.

BANDY LEGS, an expression applied to distorted, or crooked legs. Sometimes this is a natural defect, but it more frequently arises from improper treatment of infants by their nurses, who suffer children to stand for hours on their legs, while confined in a chair, or the absurd machinery called a go-cart, or a swing; or from an impatience to give early specimens of a child's strength, will continually try experiments with its legs, before they are able to sustain the weight of the body.

When an infant is born with bandy legs, the timely and judicious use of the bandage may correct this defect, but it requires great patience and perseverance on the part of the nurse.

This deformity cannot be easily remedied after the child has arrived at a certain age; we believe all attempts would be fruitless, and even harmful after the sixth or seventh year. Some children's legs have however returned to their natural shape after this period, from some peculiarity either in their constitutions, or in the posture in which they have sat, during the day for a long

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period; but such spontaneous cures are comparatively rare. We can only therefore in conclusion on this subject, most earnestly entreat, that nurses and others, having the management of children, will religiously avoid the keeping of infants long in any one posture, and particularly that where the weight of the body rests upon the legs; and they will also not fail to remember, that the swing and the go-cart are highly injurious, and that the use of both ought to be wholly avoided.

BANE-BERRIES, the production of the **HERB CHRISTOPHER**, the *Actæa spicata* of L. a native plant in a high degree poisonous, though very rare, being chiefly found in Yorkshire.

Bane berries yield, on boiling them with alum, an excellent black colour, which in a concentrated state may be substituted for a cheap writing ink.

BANK, in commerce, signifies a common repository, where persons consent to keep their money: it is also applied to certain societies, or communities, who take charge of the money of others, either for the purpose of accumulating it by interest, or preserving it in safety. Banks originated in Italy.

The greatest Bank in the world is no doubt the Bank of England. It was incorporated in the year 1694. Dividends of its profits are made half yearly, where those who have occasion for their money may readily receive it in paper; but private individuals are permitted to continue their funds, if they think proper, and may have the interest added to the principal.

This Bank has not paid any of its notes in specie since the year 1797, except for a limited period, a short time since. An Act of Parliament passed during the last Session of Parliament, (1819) for regulating the return of the Bank to the issue of gold, in payment of its notes; but as the period at which the regulations are to commence has not yet arrived, we are of course precluded from speaking of their consequences. We may however observe, that the British public generally

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seem so well satisfied with the circulation of Bank of England notes, instead of gold, except relative to the facility with which they can be imitated, and the mischiefs resulting from forgery, that, for the purpose of home circulation, we do not think they are at all anxious, or concerned about a change.

By the accounts which have from time to time been published, it appears that the largest amount of Bank notes in circulation was in the year 1817, when, from July to December, the average was 29,210,558*l*. On the first of March, 1819, the amount of notes in circulation was 24,991,410*l*; and the average of the quarter, ending the 10th of October of the same year, was 25,326,185*l*.

There is a similar Bank in Ireland, and three public Banks in Scotland; there are also various public Banks, in almost every European state.

Private banking companies have also multiplied to a great extent, during the last thirty years in Great Britain; indeed, in many counties the circulating medium is almost wholly composed of provincial bank paper: hence, from the fluctuations which have occasionally taken place, a good deal of distress and inconvenience have arisen to the country from these Banks alone. In the year 1797, the number of these Banks in Great Britain, was 353; in 1815, they amounted to about one thousand; but the convulsions which have taken place during the last three or four years, have reduced their number to about 700. It has been calculated that the amount of the notes in circulation, of the various private Banks of Great Britain, has greatly exceeded, for some years past, those of the Bank of England.

One of the chief privileges of the Bank of England has been in the prohibition of all other companies, or partnerships of more than six persons, from issuing bills or notes payable on demand, or for any time less than six months; and another before hinted at, that of issuing promissory notes with-

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out being obliged, for a limited time, to pay them in specie.

BANK BILL, a promissory note payable to bearer on demand, issued either by the Bank of England, or other company, or a private banker. We should scarcely have mentioned this article, but to enforce upon our readers the necessity of caution in taking bills, not only of the Bank of England, but of any other bank: much trouble and inconvenience would be avoided, would those, through whose hands Bank bills pass, make some memorandum, or mark upon them, which they could identify, or take their number, date, and amount.

BANK FOR SAVINGS, a kind of bank lately established in this country, to receive the money or savings of the poor, to put it out at interest, and to repay the principal, when it may be demanded.

The surplus money of the poor man being small in quantity, few are disposed to receive it, and to become its banker, hence the convenience and utility of the institution of Savings Banks.

Although we are not so sanguine, relative to the utility of these Banks, as many persons, we think that, under wise management and controul, some good must necessarily arise from establishments of this kind, conducted with discretion, and countenanced by those classes whose influence on the minds of their dependants, and poorer neighbours, is, at all times, more or less important; especially if the means for paying, and receiving again, the sums deposited, are made as easy and simple as they might, and undoubtedly ought to be.

The first attempt, we are informed, to institute a Savings Bank, was made by Mrs. PRISCILLA WAKEFIELD, a lady to whom the public are indebted for several excellent productions of her pen. In her account, dated from Tottenham, May 24, 1804, she states that for the purpose of providing a safe and convenient place of deposit for the savings of labourers, servants, and other poor persons, a charitable establishment

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has been lately formed at Tottenham, in the county of Middlesex. It is guaranteed by six trustees, who are gentlemen of fortune and responsibility. This renders it as safe and certain as institutions of this kind can be, and insures it from that fluctuation of value to which the public funds are liable. The books are kept by a lady, and never opened but on the first Monday in every month, either for receipts or payments. Any sum is received above one shilling; and five *per cent.* is given for every twenty shillings, which is twelve calendar months; every person so depositing money being at liberty to recal it any day the books are opened; but no business is transacted at any other time. The money so collected is divided equally between the six trustees. For every additional 100*l.* a new trustee is to be chosen; so that a trustee can only risk his proportion of 100*l.* None but the labouring classes are admitted to this benefit; and there is no restriction as to the place of residence.

Upon this plan, or a similar one, with of course a variety of modifications, have a great number of Savings Banks been established in various parts of this country. Of their utilities and advantage it is not at present easy to speak decisively; but we think, upon the whole, that such institutions deserve encouragement; and that the attention of those opulent members of the community, who have it always in their power to do an infinity of good, and whose active exertions in behalf of the poor cannot fail to return to them in accumulated interest of heartfelt satisfaction, and a consciousness of fulfilled duties, can scarcely, perhaps, be better employed.

BANK FENCE, in rural economy, signifies the inclosure of ground with an artificial bank. It is made with turf or green sods, about five or six inches thick, the foundation five feet wide; the middle is filled up with earth; the height of the bank should be about three feet, or more; the top three feet wide, and planted with proper shrubs, or dwarf wood. These banks are beyond

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question the best for the inclosure of fields, as they take up less room than any other mode of division, or inclosure, railing or stones excepted; and besides furnish shelter for cattle, a consideration to the farmer of no trifling importance.

BANKRUPT, a trader who is unable to pay his creditors the full amount of their demands, and who has committed an act of bankruptcy; such as departing from the realm with an intent to defraud his creditors; leaving his house with intent to secrete himself for the same purpose; remaining in his house so as not to be accessible to his creditors; procuring or suffering himself willingly to be arrested, outlawed, or imprisoned without a just or lawful reason; causing his money or effects to be sequestered by any legal process; making any fraudulent conveyance to a friend; procuring any protection to screen his person from arrests, endeavouring to compel his creditors to take less than their just debts, or to procrastinate the time of payment, lying in prison for two or more months upon arrest, or other detention for debt, without finding bail; escaping from prison after an arrest for a just debt of one hundred pounds or upwards; and neglecting to make satisfaction for any just debt to the amount of one hundred pounds, within two months after legal process, for such debt upon any trader, enjoying the privilege of parliament.

The benefit of the bankrupt laws is allowed to none but *actual traders*, or such as buy and sell, and gain a livelihood by so doing. However such is the complexity of the laws relative to bankruptcy, that we do not deem it prudent to extend this article any further; and can only advise our readers who are desirous of learning more on this subject, to apply to some intelligent and professional lawyer. See **COMMISSION OF BANKRUPTCY**.

BANNS of MARRIAGE, are notices of matrimonial contracts about to be entered into, made by the officiating clergyman in the parish church before

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marriage, so that if there be any objections to either party, there may be an opportunity of making them. The publication of banns, commonly called *asking in the church*, was intended as an expedient to prevent clandestine marriages; but a license is now so easily procured, that their use is defeated. It does not appear, however, except in the case of minors, and one or two others, that the clergyman can refuse to marry persons whose banns have been forbidden; so that in point of fact, the publication of banns is generally a mere *pro forma* proceeding: a proof of prior engagement, for example, would not justify the clergyman in refusing to marry the parties, where banns were published and forbidden, if both parties were, in other respects, competent to contract matrimony.

BANTAM COCK, a small fowl well known in the poultry yard, whose legs have feathers almost to the ground; it is valued chiefly for its grotesque figure, and delicate flesh.

A variety of this bird has been lately obtained extremely small, and with smooth legs. From their size and delicacy they are very convenient, as they may always stand in the place of chickens, when small ones are not to be had. They are also particularly useful for sitting upon the eggs of partridges and pheasants, being good nurses as well as good layers.

BARBADOES TAR, called also *petroleum*, is a black mineral substance, somewhat thicker than treacle, and brought from the island whose name it bears. It is rarely given internally; externally, it is used as a stimulant in diseases of the hip joint, rheumatic, and other chronic pains, chilblains, and to paralytic limbs, applied by friction. It is also used in some diseases incident to horses.

BARBEL, a fresh water fish belonging to the genus *Cyprinus*. The barbel resembles the pike in its general shape, the head excepted; the upper jaw of the former is more projecting; it is also provided with four dependent fibres, or rays in the gills, with which,

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while dexterously playing, it allures its prey, consisting of insects and small fishes. The dorsal fin is armed with a remarkably strong and sharp spine. In size the barbel rarely exceeds the length of three feet, and weighs from twelve to eighteen, or twenty five pounds. Its most frequent places of abode are the sides of hollow banks, in calm and deep water. It spawns in May and June. It is so tame that it may be easily caught by the hand. The flesh of this fish is coarse, and therefore eaten almost exclusively by the industrious poor, who boil it with bacon to render it more palatable; its roe is not wholesome, and ought therefore to be thrown away, as the eating of it is frequently attended with nausea, vomiting and purging. For the method of catching this fish, see **CARP**.

BARBERRY, the *Berberis*, *L.* a shrub of which there are five species, four are natives of warm climates, and one, the *Berberis vulgaris*, indigenous to this country. This shrub is called also, in some parts of England, *Piperidge*. It is frequently cultivated in gardens for its fruit, which makes a good pickle, and is used for garnishing dishes. It rises to the height of five or six feet, or more, with many stalks, both which and the branches are thorny. The leaves are oval and obtuse, with slightly serrated edges. The blossoms appear in May and June, at the wings of the leaves in small bunches, like those of the currant: these are succeeded by oval fruit, at first green, but when ripe, in September, are of a fine red colour.

When this shrub is cultivated for fruit, it should be planted singly, and not in hedges. The suckers should be cut up every autumn, and the luxuriant shoots pruned; by which means the fruit will be more abundant and of a better quality.

Barberries are gratefully acid, and moderately astringent; and are said to be of great use in biliary fluxes, and in all cases where heat, acrimony, and putridity prevail.

This plant, it is now pretty generally

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admitted, is often injurious to corn fields near which it grows, by producing the disease in corn called *rust*. The cause is said to originate in a species of fungus, which lies in any cleft or fissure in the bark, occasioned by injury, exhibiting many black pustules. To prevent the mischief from spreading, these black pustules should be cut out: for it is known, that when the bark of the barberry is smooth and intire it does little or no mischief; and when there are fissures in the bark, they prove sources of destruction: hence also, when the barberry bush is small, it does not occasion mildew.

The roots of this shrub, boiled in ley, impart a yellow colour to wood. Leather may also be tanned of a most beautiful yellow with the bark of the root; and the inner bark of the stalk has also been used for dyeing linen of a similar colour.

It is eaten by cows, sheep, and goats, but rejected by swine.

BARBLES, BARBS, or PAPS, are small protuberances under the tongue of the horse; they are the terminations of the salivary ducts, which convey the saliva from the glands, which pour that fluid into the mouth. They are sometimes inflamed and so enlarged as to hinder the horse from feeding: the disease is named the barbs. Bleeding, and bran mashes, and syringing the parts with a solution of alum, is the best remedy for it. Some practitioners advise cutting them off close, and touching the roots with lunar caustic; but this operation is by no means necessary.

Black cattle are subject to a species of barbs, which grow quickly, and hang in the form of fleshy pimples, under the tongue; they should be cut off close with a sharp pair of scissors, or a knife, and the wound be washed several times a day with port wine or vinegar, taking care that no hard food, but only fresh grass, green herbs, and mashes be given for several days, till it is healed.

BARILLA, *Soda impura*, or *Impure subcarbonate of Soda*, is found native in various parts of the world, and on

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the margins of some lakes, which become dry in the summer. But the greater part of the barilla which is employed, in this country at least, is of vegetable origin, being prepared from the ashes of some species of *algæ*; but more abundantly from those of the *Salsola soda*, a plant which is cultivated on the shores of the Mediterranean by the Spaniards, expressly for the purpose of yielding this salt. This plant is cultivated in salt marshes, chiefly in the vicinity of Alicante; and near Carthage, two hundred thousand quintals of this salt are gathered annually. In September, when the seed is ripe, it is pulled up by the roots; after which it is dried, and in October burnt in simple furnaces, the heat of which is just sufficient to cause the ashes to enter into a state of semi-fusion, and concrete into compact cellular masses, which form the *barilla* of commerce.

There is also a coarse species of barilla obtained in this country by burning the *sea-wrack*, chiefly the *fucus vesiculosus* and *serratus*, commonly denominated *kelp*. This is used principally in the manufacture of black glass for bottles.

Barilla is also obtained from Sardinia, Sicily, and some other parts of the Mediterranean. It may be also obtained from various indigenous plants of this country, particularly from two species of the *Salsola* or **SALT WORT**; from two species of the *Salicornia*, **GLASS WORT**, and **SAMPIRE**; from the *Zostera marina*, or **GLASS WRECK**; two species of the *Triglochin* or **ARROW-GRASS**; from the *Chenopodium Album* and *maritimum*, or **White and Sea Goose Foot**; from the *Atriplex Portulacoides* and *Littoralis*, or **SEA PURSLANE** and **GRASS ORACH**; from the *Plantago Maritima*, or **SEA PLANTAIN**; from the *Tamarix Gallica*, or **French TAMARISK**; from the *Eryngium Maritimum*, or **SEA HOLLY**; from the *Sedum Telephium*, or **Orpine STONECROP** or **LIVELONG**; from the *Dipsacus Fullonum*, or **manured TEASEL**; and from all the species of the *Cynara* and *Carduus*, or the **ARTICHOKE** and **THISTLE**, when cul-

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tivated either on the sea-shore, or in any soil irrigated with sea water. See most of these articles in the order of the alphabet.

Good Barilla is in hard, dry, cellular, sonorous masses of a greyish blue colour, and becomes covered over with a saline efflorescence when exposed to the air. It should not emit any unpleasant odour on solution; and when applied to the tongue should impress a sharp alkaline taste.

Barilla is not used in medicine; but the pure subcarbonate of soda is obtained from it. See SODA.

It is, however, used largely in some of our manufactures, particularly glass and soap. See these articles.

BARIUM, a metal obtained some time since from, and proved to be the basis of barytes, or ponderous earth, by Sir Humphry Davy. It is of a dark grey colour, and about twice as heavy as water. Most of the combinations of this metal are poisonous. See BARYTES.

BARK, in botany, is the skin or outer covering of a plant: it consists of three parts, the cuticle, or *epidermis*; the outer bark, *cortex*; and the inner bark, *liber*.

The nature and composition of bark are but imperfectly known, as the ingredients of which it is composed vary considerably in the bark obtained from different trees and vegetables. The barks of oak, Leicester willow, Spanish chesnut, elm, and common willow have been examined by Sir Humphry Davy; and the Peruvian bark, or cinchona, has been ably analyzed by Fourcroy. The gallic acid, and tannic, are found in many of the barks, probably in all which are astringent; extract, or the extractive principle, is contained in most of them; and the ligneous fibre, or woody part, appears common to them all; the two last differing in proportion and property in the several species.

One of the principal uses of the bark is doubtless to protect the tree from the external air and cold; and, from its evidently being a bad conductor of heat, to retain the vital principle of vegetation. The bark appears to be essential

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also to promote the growth of the tree; for, from experiments which have been made, trees stripped of their bark the whole length of their trunks, do not live longer than three or four years. It should be observed, however, that when thus deprived of their bark, and suffered to die gradually, they afford a more compact, heavy, and more durable timber, than when felled in a healthy state.

For the uses and medicinal virtues of different barks, see **ANGUSTURA**, **CASCARILLA**, **CASSIA**, **CINNAMON**, **OAK**, **PERUVIAN**, **WILLOW**, **BARK**, &c.

BARKING OF TREES should, in the climate of Great Britain, be performed in the spring, from about the middle of April to that of May; because, at this period, the circulating sap facilitates the operation, which is not only attended with additional labour at other times, but the bark is, generally, esteemed of inferior value. If, however, the *timber*, and not the bark, be the primary object, some recent experiments have demonstrated, that if the tree intended to be felled be suffered to stand till about Christmas, when the vegetative process is suspended, the bark which would have separated with ease, will be found inseparable, and the timber, when cut and seasoned, will be much more hard and impenetrable than when felled in the spring. See **DRY-ROT**.

BARLEY, *Hordeum*, *L.* one of the most useful culmiferous plants, the seeds of which are used in brewing, and a variety of other purposes, too well known to need description.

The chief kinds of barley are the following: the *hordeum distichum*, or *summer barley*. It bears flat ears, divided into two rows, containing large grains; it grows wild in Tartary, in the vicinity of Babylon, and in Sicily. It requires a loose rich soil, and must be sown in dry weather. Of this species there are two varieties; the first, *hordeum distichum nudum*, or Large Naked Barley, which bears smooth heavy grains, that afford excellent flour,

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which, when mixed with that of rye, makes a palatable bread, and may also be used for puddings and pastry. It also makes excellent beer, and yields a large proportion of spirit by distillation; hence it deserves to be preferably cultivated: the second variety is the *hordeum frutescens*, or Bush Barley, one grain of which often produces ten stalks, with broad, dark green leaves. It is sown late, generally about Midsummer, soon ripens; is more prolific, but produces smaller grains than the former, but easily degenerates. The Germans sow it thinly, and in a moist heavy soil.

The *hordeum vulgare*, or Common Barley of four rows. It is productive of longer, though thinner ears and grains than the first species: as it thrives well on inferior soils it is frequently cultivated in preference to the former. A variety of this species is the *hordeum cæleste*, or Wallachian Barley, called also Egyptian corn. Its ears and fruit are in every respect similar to the common barley, except that it readily sheds its grains. It is sown in the month of April, in a well-manured, middle kind of soil.

The *hordeum hexasticon*, or Six-rowed Barley, is uncommonly fruitful, although, in ordinary seasons, the grains of the two rows do not attain maturity. It is sowed in a well prepared and tolerably rich soil, either in April, or about Michaelmas: in the former case, it may be mowed so early as Midsummer. This species, however, is not so proper for brewing beer as for being reduced either into groats or flour, or for obtaining ardent spirits. This species is known in Scotland by the name of *Big*.

The *hordeum zeocritum*, Bearded Barley, or Rice Barley, with short and coarse stalks, and short, though broad ears, divided into two rows. When it is cultivated on a good soil, and thinly sown, it is the most productive of all the species of barley. It does not droop its ears, nor lodge even in rainy seasons. It yields a fine white flour, very useful for culinary purposes.

The best home-brewed ale is produced from this grain.

The *hordeum murinum*, or Wall Barley, a native, although uncultivated, English plant, growing generally on the sides of roads, walls, &c. It blossoms in May and June. Horses and cows are particularly fond of it.

The *hordeum maritimum*, or Sea Barley, grows in pasture grounds and gravelly shores.

Barley cannot be cultivated with advantage on a stiff, heavy, or wet kind of soil, or on such as is of a cold, clayey, and tenacious quality. It grows best on a loamy sand, or such soils as are moderately dry, light and mellow. Light poor land when dry and warm, in respect to soil and situation, is capable of yielding barley of much superior quality to strong lands, which are of a clayey, cold, and moist nature.

Barley may be sown after every kind of crop, but it succeeds best after those of the green or meliorating kind, such as turnips, potatoes, carrots, peas, tares, &c. It can seldom be cultivated with advantage after wheat, rye, or oats. When flax, hemp, or rape are grown, barley may sometimes be sown after them. When sown after any of these improving crops manure is seldom necessary. If, however, wheat, or other sort of stubble be chosen for the purpose, manure, (soap boilers ashes are said to be best for barley) will be requisite, which should always be well mixed, and incorporated with the mould before the seed is put in.

After whatever sort of crop this grain may be sown, it is necessary that the soil should be always reduced to a state of fineness, so as to be properly open and porous, in order to secure equal and perfect vegetation. This is to be effected by different slight or ebb ploughings and harrowings, as well as by occasional cross ploughing and rolling. The improved system of management, in preparing all the heavier sorts of land for the reception of barley, and other spring crops, is that of ploughing the land, in autumn, into such forms or ridges as may be suit-

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able for the particular method of sowing that may be practised, and to render the surface fine for the seed, by scarifying and scuffling at the season of putting it into the ground.

If the barley is to be sown *broad-cast*, three bushels, and sometimes four or more, per acre, are allowed; and if it is to be *drilled*, two bushels will be generally sufficient. From some experiments which have been made, it appears that the comparative produce of the *drill* method and the *broad-cast*, has been found to be in the proportion of eighteen bushels by the former, and fifteen bushels by the latter method.

As it is of great consequence that the grain should ripen equally and uniformly, it is desirable to forward its vegetation, when it is sown, as much as possible, in order that it may gain advantage over weeds; this may be done by steeping the barley intended to be sown, in clean water for at least twenty four, or thirty-six hours; depending upon dampness or dryness of the season; by which means, all the light and unripe grains which swim on the top of the water, may be skimmed off, and, possibly, the *smut* at the same time be prevented. As clean water imparts no tenacity, the seed will scatter properly; but it must not be forgotten, that as the grain is swelled by the water, a larger quantity than of dry barley will be necessary for the same measure of land; at least, one fourth, or, perhaps, one third more. It should be harrowed in as quickly as possible after it is sown, and if convenient, it might have the benefit of a fresh furrow. By this method, if duly attended to, it will appear above the ground, at farthest, in a fortnight from the period of its being put into the earth.

It is the practice of many districts to sow clover, and other grass seeds, with barley; but, where the soil is very rich, this method is improper, as much injury may be done to the grain by the rapid and luxuriant growth of such crops, rendering the plants weak. On thin and less fertile soils, where the

growth of such grass is less vigorous, it may, however, be adopted with advantage. Where this mode of management is had recourse to, the sowing of grass seeds may be deferred for some time after the grain has been sown; and when they are put in, a light harrow may be passed over them, and the land be afterwards well rolled.

The success which has attended the use of the drill, and the setting of grain, in particular cases, suggests the propriety of similar practices in regard to barley, especially on the richer description of soils: for, as we have before mentioned, the produce may be increased. It is much easier too, to keep drilled grain free from weeds, than such as has been sown broad-cast. Where the drill method is adopted, the most proper distance is, probably, nine inches.

In the choice of seed attention should be paid to the colour, and to the state of the skin, or rind of the grain. That is esteemed the best, which has a pale lively bright appearance, without having the tails of the corn stained in any way, and which is full and plump. It is common, with practical farmers, to change the seed of barley every year or two, from the supposition, that the grain becomes coarser by the repeated sowing of the same kind of seed. The necessity of this custom may probably, however, arise from the neglect of sowing such seed as is full-bodied, and perfectly ripened.

As barley is generally sown broad-cast, it seldom receives any improvement by culture afterwards. It is obvious, however, that by occasionally stirring and loosening the mould about the roots of the plants, and keeping them clean, and perfectly free from weeds, much good may be done to the plants, and the crops thereby improved. The drill-sown crops have obviously a great advantage in this respect.

When the season turns out dry and unkindly in the spring months, barley is often much injured by the worms, when the plants suddenly change from a healthy green to a yellow cast. On

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the first appearance of this change, the roller should be had recourse to, in order that the soil may be effectually pressed, and by such means become too close and compact to admit the worm to prey upon the tender roots of the young plants. The roller should be of such a size, or so loaded, as to afford a pressure equal to the draught of three or four horses, which should be yoked double, in order to increase the effect by their treading.

In soils where barley crops become too rank and luxuriant, on rich lands, it may be often necessary to restrict the overgrowth of the crops, by cutting them with a scythe, as a green food for animals. They are sometimes fed by sheep, but we do not think the method either judicious or proper.

The only certain mode of judging whether barley be ripe, is the drooping and falling of the ears, so as to double against the straw. If barley be not ripe before it is mown, it will never ripen afterwards. This is important to be known.

Barley, after it is cut, should constantly remain out in the field, until it be perfectly dry and free from moisture, otherwise it is liable to heat in the stack, and become injured both as seed and for malt.

Barley lying in the mow unthreshed will keep, if properly stacked, for one or two years. But when it is converted into malt it can with difficulty be preserved longer than one year, without being infested with weevils. One of the best methods of destroying these vermin, is to lay dry worm-wood in the malt. See **MALT** and **SMUT**.

Besides the large quantities of barley used in brewing ale and beer of different kinds, and also for the obtaining of ardent spirits by the distillers, the consumption of this grain is very considerable as an article of diet, especially in Scotland, and in Germany. In both countries *barley broth* is as common a dish as *soup* in France. Barley is also used as food in the shape of meal or flour; but it is by no means so nutritious as wheat, chiefly from its con-

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taining little gluten, which the latter corn possesses to a great extent. See **HUSBANDRY**, and the following articles. See also **WORT**.

BARLEY CORN, a term used to denote a measure, containing in length the third part of an inch, and in breadth the eighth.

BARLEY, PEARL, is nothing more than common barley, reduced in a mill to the size of a small shot, all but the heart of the grain being ground away. It was formerly brought from abroad, but for some time past great quantities have been prepared in Great Britain. Pearl barley is used principally for making **BARLEY-WATER**, to which we refer.

BARLEY, SCOTCH or FRENCH. The only difference between this and the preceding article is in the size of the grains. Scotch, or French barley, having been only deprived of its outer skin, and the ends being rounded off by the mill, the grains are, in consequence, much larger, coarser, and of a browner colour than pearl barley. This is principally used for soups, broths, &c. A description of a mill for making Pearl and Scotch barley may be seen in **SINCLAIR'S Code of Agriculture**, page 638.

BARLEY WATER is made in the following manner. Take of pearl barley two ounces, water four pints and a half. First wash away any extraneous substances which may adhere to the barley; then, having poured on it half a pint of water let it boil for a few minutes. This water is to be thrown away, and let the remainder be added boiling; then boil down to two pints and strain. This is the method ordered by the London College of Physicians. But, it sometimes happens that sick patients, for variety as well as nutrition, will require barley water considerably thicker than the above quantity will make the water, in which case it is easy to increase the quantity of the barley. But this should be rather called *barley gruel*.

Barley water is a very useful drink in cases of fever, pulmonary consump-

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tion, gonorrhœa, and stranguary ; and, indeed, in all acute diseases, given at pleasure.

Barley Straw. See STRAW.

BARM, or **YEAST**, is the froth or scum which rises on beer, and other malt liquors, during their fermentation.

Barm is an article of the greatest importance in domestic economy ; it forms a necessary ingredient in bread, which would, without it, be heavy and unwholesome. It is also necessary to accelerate the fermentation of all malt, and some other liquors, and many English wines.

Barm has a vinous, sour odour ; a bitter taste, arising, most probably, from the hops in the malt liquor, whence it is commonly obtained ; and it reddens the vegetable blues. When it is filtered a matter remains on the filter, which possesses properties similar to vegetable gluten ; by this separation the yeast loses the property of exciting fermentation, but recovers it again when the gluten is added. The addition of yeast to any vegetable substance, containing saccharine matter, excites fermentation in it, and a quantity of carbonic acid gas is evolved. Liquidity is essential to the perfection of the process.

Common ale barm may be kept fresh and fit for use for several months, by putting a quantity of it into a close canvas bag, and gently squeezing out the moisture in a screw press, till the remaining matter be as firm and stiff as clay. In this state it should be closely packed up in a tight cask so as to secure it from the air ; it should also be deposited in a cool place or cellar, not subject to alterations of temperature.

It may also, after it is pressed to the consistence of clay, be dried in a gentle heat, either before the fire or in a fine hair or wire sieve, or in an oven moderately heated ; it must, of course, be kept in jars or bottles closely stopped. When this dried yeast is to be used it should be dissolved in fresh ale or porter.

A variety of experiments have been made relative to the *generation* of yeast,

but none, which we have seen, are of a nature to deserve a place in a Family Cyclopædia. As substitutes for this article we, however, add the following :

Take six quarts of soft water and two handfuls of wheaten barley or meal ; stir the latter in before the mixture is placed over the fire, where it must very gradually simmer, and at length boil till two thirds of the fluid be evaporated, so that it may consist of two quarts. When this decoction becomes cool, incorporate with it, by means of a whisk, a powder consisting of two drachms of salt of tartar, and one drachm of cream of tartar, previously mixed. The whole should now be kept in a warm place. Thus a very strong yeast for brewing, distilling, and baking, is said to be obtained. For the last mentioned purpose, however, such barm ought to be diluted with pure water and passed through a sieve before it is kneaded with the dough, in order to deprive it of its alkaline taste.

Boil four ounces of flour in two quarts of water for half an hour, and sweeten it with three ounces of raw sugar. When this mixture is nearly cold, pour it on four spoonfuls of yeast into an earthen or stone jar, sufficiently deep to admit the raw barm to rise : it must now be well shaken ; placed near the fire for the day, and then the thin liquor be poured off the surface. The remainder is next to be agitated, strained, closed up for use, and kept in a cool place. Some of the yeast, thus prepared, ought always to be preserved for renewing, or making the next quantity which may be wanted.

Barm is tonic and antiseptic. Some years ago it was given with apparent advantage in putrid fevers, and putrid sore throats, but the facts then brought forward of its efficacy require further confirmation. As an external application, however, to foul and gangrenous ulcers, when united with oatmeal or linseed meal, in the form of cataplasm or poultice, it is productive of the best effects. It corrects the smell of the discharge, assists sloughing, and promotes the formation of a benign and

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healthy pus. The poultice should be thus made : take of flour four ounces, of yeast two ounces, by measure, mix them together, and expose to a gentle heat until the mixture swells.

The dose of barm is a table spoonful or two, repeated every second or third hour. It is generally combined with porter, or wine, and sugar.

BARN, in husbandry, a covered building, or place with vent holes in the sides, for laying up any kind of grain hay, or straw.

The size and construction of barns must be varied in some measure, according to the customs and situations of the places where they are to be erected. Where thrashing machines and the practice of stacking are properly held in estimation, large barns are quite unnecessary. Indeed, those enormous barns often attached to English farms are very exceptionable : for it should never be forgotten, that grain in the straw keeps infinitely better in the open air than in close barns ; it is less apt to be destroyed by vermin ; and when it is put up in stacks, the expense of constructing, as well of repairing great barns, is saved. On small farms, and where a preference is given to the use of the flail, and the storing of crops in barns instead of stacks, they should be of large dimensions, in order not only to admit the necessary quantity of grain to be deposited in them, but to allow sufficient room for the free use of the flail. In such cases they should not, perhaps, be less than eighteen or twenty feet wide, with height and length proportioned to the quantity of materials which they are designed to contain. Air should likewise be pretty freely admitted into them, on different sides, by means of slides, or other contrivances.

The construction of the floors should be particularly attended to, in order that they may be firm and dry ; the first purpose is best obtained by making them of good oak plank. Floors formed of clay, and other substances of a similar kind, are liable to crack, and be broken up by the different open-

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ations which are performed upon them. When floors are made with planks, it is a good method to lay them upon a foundation of bricks, and unite the different planks by ploughing and tonguing. In this way floors are made more secure, and freer from damp, than when they are nailed down to sleepers. The size of the thrashing floors must vary according to circumstances ; but twelve feet by eighteen is in general a good proportion. Next to oak planks, and nearly equal for thrashing floors, are bricks four inches thick, made of good, tempered clay, well burned, and laid edgeways with well-beaten mortar. The addition of flues and floors for the purpose of drying might also be sometimes conveniently employed, and would frequently be found advantageous in moist and damp seasons.

Moveable barn floors are also sometimes used. One of this kind invented by Mr. Upton, is said to be the best. It is composed of oak plank, five feet eight inches in length, and one inch and a half thick. But it may be made of deal, beech, or elm, as it will be perfectly free from decay by damp. It may be drawn upon with greater facility by loaded carts, or waggons, and provides, when down, comfortable shelter for hogs ; and when turned up may be used as a stable, ox-stall, hovel, or cart-house : it may be placed or displaced in a few minutes by means of only two persons. It is supposed by the inventor that these kind of floors will last a hundred years. From their being moveable they may be conveyed from one barn to another, and the expense of having many floors is saved.

But, although barn floors of this kind may be useful and convenient in particular cases, where farms are extensive, and where for want of the thrashing machine the flail is employed ; in other circumstances, from their complexity, and their requiring considerable room when not in use, they do not seem to have much superiority over the fixed kind.

BARNACLES, called also **TWITCHERS**, are instruments usually put upon

BAROMETER

the upper lip of a horse to make him stand quiet in order to be shod, bled, or dressed for any sore.

BAROMETER, an instrument consisting generally of a glass tube somewhat more than thirty inches in length, filled with quicksilver, and immersed in a small bason containing the same metal. It is used for ascertaining the weight or pressure of the atmosphere; and by such means, the variations in the state of the air foretelling the changes in the weather, and also for measuring the heights of hills, depths of mines, &c.

The discovery of this instrument is due to the united talents of *Galileo* and *Torricelli*. An accident had just demonstrated that water could not be raised in a pump unless the sucker reached to within thirty-three feet of the water in a well. Torricelli, at the suggestion of Galileo, set about explaining the phenomenon. He found that a column of water 33 feet high, was an exact counterpoise to a column of air of the same base, and which extended up to the top of the atmosphere; and that this was the true reason why the water did not follow the sucker any further. After various experiments, it was determined, that if a column of water of 33 feet were a counterpoise to a whole column of the atmosphere, then it followed that a column of quicksilver about two feet and a half high, would also be a counterpoise to it, since quicksilver is fourteen times heavier than water, and thus the 14th part of the height, or about two feet and a half, would be as heavy as the column of water. This reasoning was soon verified: for a glass tube closed at one end, and being filled with quicksilver, and inverted into a bason containing the same metal, the mercury descended till its height above that in the bason was about two feet and a half, as Torricelli expected. Upon this fact, which appears to be immutable as far as regards its general outlines, does the construction of the barometer depend.

But there is also another fact no less important to be known relative to this instrument. Although the quicksilver

in the barometer is sometimes found to be, at the surface of the earth, and in level districts, as high as even 30, or nearly 31 inches, yet from the variation in the weight of the atmosphere, its height is more or less fluctuating, sometimes descending almost as low as twenty-eight inches, and rarely, if ever, exceeding thirty-one. Again, if we descend mines, it will be found that the height of the mercury is increased; if we ascend mountains, hills,* or even a house, the mercury in the barometer sinks, and hence if the *temperature* of the instrument at the top and bottom of a hill correspond, or proper allowance be made for the difference, the height can be told by the barometer with the greatest accuracy. When therefore at the surface of the earth, the density of pressure is equal to the support of a column of quicksilver 30 inches high,

Inches.

At 1,000 feet above the surface,	
the column falls to . . .	28,91
2,000	27,86
3,000	26,85
4,000	25,87
5,000	24,93
1 mile	24,67
2	20,29
3	16,68
4	13,72
5	11,28
10	4,24
15	1,60
20	0,95

From this description of the barometer, it will be easily seen, that when the air is light, the vapours, which are barely suspended in it when it is heavy, must fall to the ground; this consideration, together with the change of temperature from heat to cold, &c. satisfactorily accounts for rain, dews, fogs, &c.

It will now be only necessary to state, for the practical use of those persons who are indisposed for philosophical investigation relative to the barometer, that the rising of the quicksilver *generally* presages fair weather, as its falling does the contrary, or rain, snow, high winds, and storms. In very hot weather, the sudden falling of the quicksilver portends thunder. In *winter*, the rising indicates frost; and in frosty weather,

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if the quicksilver fall three or four divisions, there will certainly follow a thaw ; but if it rise in a continued frost, it will always be accompanied with snow. When foul weather quickly succeeds after the falling of the quicksilver, it will not be of long duration ; nor are we to expect a continuance of fair weather, when it soon succeeds the rise of the quicksilver. If in foul weather the mercury happens to ascend considerably, and continues in an advancing state for two or three days successively, then we may expect also a continuance of fair weather. If in clear weather the quicksilver falls remarkably for two or three days together, before the rain sets in, it is then highly probable that it will be succeeded by much rain, and perhaps high winds. The unsettled motion of the mercury indicates changeable weather. It must not be forgotten, that the words engraved on the register-plate of the barometer, cannot be strictly relied upon, to correspond exactly with the state of the weather ; although it will in general agree with them as to the quicksilver's rising or falling. These words deserve to be particularly noticed when the quicksilver remains from *changeable*, upwards ; as those on the lower part should be adverted to, when the quicksilver falls from *changeable*, downwards. In other cases they are of no use : for as its rising in any part forebodes a tendency to fair, and its falling to foul weather, it follows, that though it descend in the tube from *settled to fair*, it may nevertheless be attended with a little rain ; and when it rises from the words *much rain*, to *rain*, it shews only an inclination to become fair, though the wet weather may still continue in a less considerable degree than it was when the mercury began to rise. But if the mercury, after having fallen to *much rain*, should ascend to *changeable*, it predicts fair weather, although of a shorter continuance than if the quicksilver had risen still higher ; and so on the contrary, if the mercury stood at *fair*, and descends to *changeable*, it presages foul weather, though not of such duration as if it had fallen lower.

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It appears, therefore, that the height of the mercury is not the principal criterion for ascertaining the probable changes of the weather, but rather the relative motion of that fluid in the tube. Hence, to judge rightly of the weather by this instrument, we ought to ascertain correctly whether the quicksilver be rising or falling. The following rules may be of advantage. If the surface of the mercury be convex, standing higher in the middle of the tube than at the sides, it generally indicates that it is rising. If its surface be concave, it is then sinking. If it appear level, it is stationary. If, after shaking the tube of a small glass, the mercury rises about half a tenth of an inch higher than it stood before, it is a proof that the air is become heavier ; but if it sinks as much, it follows that the atmosphere is lighter. Hence, in making observations on the weather, such a glass should always be previously shaken, because the metal which adheres to the sides of the tube prevents its free motion, till disengaged by a slight agitation of the instrument. These phenomena are peculiar to places situated at a distance from the equator, and therefore deserve to be attended to in our climate : on the contrary, at St. Helena, according to the observations of Dr. HALLEY, made in that island, they would be of little or no service, the mercury remaining stationary in all weathers. See SPIDER.

There are several sorts of barometers, besides that of which we have spoken, such as the conical, the diagonal, the wheel, the compound, and the travelling barometer ; Sir Henry Englefield has also constructed a barometer, expressly for measuring the heights of mountains, the mode of using which is described in the *Journal of Science and the Arts*. Vol. V. page 229.

BARREL in commerce, is a cask made of wood ; the word is sometimes employed in a generic sense by the vulgar, and it then means precisely the same as cask ; but in its more restricted and appropriate sense, it means a cask which contains some certain and specific

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quantity, either of a liquid or a dry article :

A barrel of beer is 36 gallons ; a barrel of ale 32 gallons ; of vinegar 34 gallons. A barrel of Essex butter weighs 106 pounds ; of Suffolk butter 256 pounds. A barrel of American flour 196 pounds ; a barrel of herrings ought to contain 32 gallons wine measure, and about 1000 herrings ; a barrel of salmon ought to contain 42 gallons, and a barrel of eels the same quantity ; a barrel of soap must weigh 256 pounds, &c.

BARRENNESS, a term synonymous with sterility. That the creation might not degenerate, it is wisely ordained that all monstrous productions should be barren ; hence the sterility of mules, &c.

Females sometimes become barren after a miscarriage, or a difficult labour. Sterility in either sex may also arise from a schirrosity, or induration in the organs, by which their functions become impaired, and sometimes even destroyed. The causes of sterility, however, are much more frequent in the female, than in the male sex ; and these causes in general are schirrosities and obstructions arising from fear, grief, inordinate passions, and their excessive indulgence, intemperance, neglect of cleanliness ; and more frequently perhaps in consequence of inveterate complaints of a periodical nature peculiar to the sex.

In this disease we think it incumbent upon us to assure our fair readers that little is to be expected from medicine, but that a good deal depends upon themselves. To forsake the path of nature, and expect relief from art, is little less than absurd : temperate living and temperance, in both mental and physical enjoyment, must be religiously adopted by every female who is desirous of becoming a mother.

BARRISTER, is a counsellor learned in the law, admitted to plead at the bar, and there to take upon him the protection and defence of his clients.

What we have said relative to attornies, (see that article) may be repeated here ; and if possible with stronger intensity, as a suit at law is often entered

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upon in consequence of the opinion of a barrister. If, therefore, the barrister, to whom application is made for his opinion, should be either incompetent to give one, or if his opinion should be given not with the honest design of settling the matter in dispute in the best, easiest, and least expensive way, but rather with a view to increase the expense, and delays of the law, no language can express the abhorrence in which such a barrister ought to be held. An honest counsellor, on the other hand, is above all price. We do not say that there are no honest counsellors ; but we are obliged to confess, that from the peculiarity of their education, we fear *Law*, and not *Justice*, is too frequently uppermost in their minds.

BARYTES, or **BARYTA**, ponderous spar, or heavy earth. A very heavy earth that is seldom met with pure in nature, but mostly in composition with the sulphuric acid. Native sulphate, as well as carbonate of barytes, are found in various parts of England, and also on the continent. Eight different species of this earth have been enumerated. It forms a variety of compounds with different acids. See **BARIUM**.

Sulphate of Barytes is inodorous and insipid. Its colour is white, with shades of yellow, red, blue, and brown. It occurs transparent, semitransparent, or only translucent, and is hard, brittle, and heavy, its specific gravity being 4.7. The varieties of form of its crystals are numerous. It breaks with a straight foliated fracture ; the fragments have a shining, pearly, almost vitreous lustre. It is fused by the blow pipe, and converted into a sulphuret, and is soluble in sulphuric acid only.

Artificial sulphate of barytes is used as a pigment, under the name of *permanent white*.

Carbonate of Barytes is inodorous and insipid, but is nevertheless poisonous. Its colour is white, or yellowish grey ; it is translucent, with a shining somewhat resinous lustre. Its specific gravity is 4.33. It may be fused into a white enamel by the blow-pipe, and

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dissolves in diluted nitric acid. It is only used for making the next preparation.

Muriate of Barytes is obtained by taking the carbonate of barytes, and the muriatic acid, of each one part, water three parts; to the water and the acid mixed together, add the carbonate broken in small pieces, and after the effervescence is finished, digest for an hour, then filter, and after proper evaporation set the solution apart that crystals may be formed.

Solution of muriate of Barytes is to be made in the following manner; take of muriate of barytes one part, distilled water three parts: dissolve. This solution possesses all the chemical and medicinal properties of the muriate; it is limpid, transparent, and colourless; but it is rapidly decomposed by the earthy, metallic, and alkaline sulphates, and nitrates, the alkaline phosphates, borates, and carbonates, being precipitated in the form of a white powder. Its affinity for sulphuric acid is so great, that it is capable of detecting 0,00009 of that acid in any fluid.

This solution is stimulant, and deobstruent, and in large doses poisonous. It was first introduced into medical practice as a remedy for cancerous and scrofulous affections, and afterwards its use was extended to syphilis. When taken in moderate doses, it appears to increase the secretion by the skin, augments the flow of urine, and improves the tone of the system; in large doses it produces violent vomiting, purging, vertigo, and even death. Medical men are still however divided in opinion as to the intrinsic importance of this medicine.

The dose requires to be carefully apportioned, and very gradually increased until from five drops, which are sufficient at first, twenty may be taken twice a day or more, if nausea be not excited. It is also sometimes used externally as an escharotic to fungous ulcers, and specks on the cornea.

Both the *carbonate* and *muriate* of barytes are extremely *poisonous*. When introduced into the stomach, or applied to wounds, they are rapidly absorbed, carried into the circulation, and

BAS

occasion vomiting, convulsions, palsy, pains in the stomach, hiccup, and great change in the features. It is highly necessary that great precaution should be taken in the administration of the muriate as a medicine; and it is equally essential that druggists and others should not confound it with Glauber salts.

When these poisons have been taken, several glasses of a solution of Epsom or Glauber's salt should be given in the proportion of half an ounce of salt to a wine quart of water. Experience has proved that there is no better antidote for the preparations of barytes; but in place of these salts, hard well-water may be administered with advantage. When we have, by these means, occasioned vomiting, and expelled, or decomposed the poison, and the principal symptoms are relieved, sugar and water, or any other softening drink may be taken; but should the disease make progress, the after treatment, mentioned under the article *AQUA FORTIS*, must be followed.

All the preparations of barytes, it should be remembered, when mixed with well-water, or water having Glauber's or Epsom salts in solution, give a white precipitate, which is not soluble in water, or diluted nitric acid. Sulphate of soda (Glauber's salts) effects no such change in these fluids; it is, therefore, impossible to confound them. Barytes dissolved in water changes syrup of violets green.

BASALT, in natural history, is a hard stone of a black, grey, or sometimes greenish colour; and on account of its constituent parts, and resemblance to *lava*, has been supposed by some naturalists to be of volcanic origin. The Giant's causeway in Ireland, and the famous cavern on the island of Staffa, are composed of basaltic columns which are unrivalled in massiveness and grandeur. Basalt is found in various parts of the British dominions: in Cornwall, in Derbyshire, in Wales, in Ireland, and Scotland.

Basalt is an excellent material for building houses and paving streets: it is

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also used by lapidaries and statuaries for various productions of art, as well as by artists in working gold and silver for touch or test stones. Gold beaters and book binders sometimes make their anvils of this firm and massy stone; basalt is also used as an ingredient in the manufacture of glass, especially for producing the common window glass and green bottles.

BASILICON OINTMENT, a preparation of which there are three kinds kept in the shops: *yellow, black, and green*. Various forms have been published for the preparation of these ointments. The following, although somewhat old fashioned, are, we believe, the best;

Yellow Basilicon. Take of yellow wax and yellow rosin, of each half a pound; of Burgundy pitch three ounces; of horse turpentine four ounces; of linseed oil ten ounces: melt first the rosin, to which add the wax, then the Burgundy pitch, and afterwards the horse turpentine. When the whole is melted and removed from the fire add the linseed oil: after straining let the ointment be stirred till it is cold.

Black Basilicon. Take of yellow wax half a pound, black rosin ten ounces, common pitch five ounces, linseed oil ten ounces. Melt the rosin first, then the wax, to which add the pitch; lastly, when removed from the fire, add the linseed oil. Strain and stir it until cold.

Green Basilicon. Take of yellow wax, yellow rosin, of each three ounces, of horse turpentine six ounces; of powdered verdigris one ounce; of lard six ounces. Melt first the rosin, afterwards the wax, then the horse turpentine, to which add the lard; when the whole is melted, strain and stir in gradually the verdigris.

These ointments are generally employed in the dressing of wounds and ulcers; and for digesting and cleansing them, as well as for promoting their cicatrization: the first is, however, most commonly used. The last is an excellent ointment for the flesh of horses, and other animals; in the course

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of this work we shall have occasion to recommend it for various purposes in farriery, &c.

When the yellow basilicon is not sufficiently active for producing healthy pus from wounds or ulcers, the green will sometimes succeed: but an addition of one drachm of the *red precipitate of mercury* to one ounce of the yellow ointment well mixed together, forms a more elegant and, in general, a more efficacious application. We consider, indeed, this mixture of so much importance that we shall have many occasions to refer to it in the progress of our work.

BASKET, a well known utensil made of twigs, generally of the willow, interwoven together. Considered as a measure in commerce it denotes an uncertain quantity: a basket of medlars is two bushels; of *asafetida* from 20 to 50 pounds weight, &c.

The ancient Britons were celebrated for their ingenuity in making baskets, as we learn both from Juvenal and Martial.

BASKET-SALT is made from the water of the salt springs in Cheshire and other places. It differs from the common brine salt in the fineness of the grain, as well as on account of its whiteness and purity. But we believe that the difference in its quality from common salt is so trifling that for common culinary purposes it is of no importance whatever.

BASTARD, a natural child, or one begotten and born out of lawful wedlock. By the English law all children born before matrimony are bastards; and so also are all children born so long after the death of the husband that by the usual course of gestation they could not be begotten by him. But this, being a matter of some uncertainty, the law is not exact as to a few days.

A bastard can inherit nothing, being, in the contemplation of the law, the son of nobody. Yet he may gain a surname by reputation, though he has none by inheritance. A bastard's parish is that in which he is born. Bastards cannot be heirs to any one; and as they cannot be heirs themselves, so

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neither can they have any heirs but those of their own bodies. If, therefore, a bastard purchase land and leave no heirs of his body, the land escheats to the lord. A bastard may, however, be made legitimate by an Act of Parliament.

BASTARD PERIPNEUMONY, *Peripneumonia notha*, or, as it has been by some medical writers called, Humoral Asthma, is a disease very different from the true peripneumony; it is generally caused by a redundancy of serum in the lungs, which stagnating in the extremities of the pulmonary vessels, produces effects very similar to those of *real* inflammation. But here inflammation is absent.

In this complaint the patient is at first seized with a sudden coldness and rigor, and loses his strength very fast; the countenance is pallid, and he feels a sensation of weariness, accompanied with a shortness of breath, and a spasmodic constriction of the lungs; he has also, generally, a slight hectic fever; the saliva is also ropy, the appetite is bad, accompanied with dejection of spirits, and a teasing cough: swelled ancles, and increasing debility, mark the further progress of the disease.

This is a very fallacious complaint: sometimes it terminates in sudden and unexpected death, and is always attended with danger.

For the cure, or at any rate, for the alleviation of this disorder, large blisters will frequently be found serviceable, and may be frequently repeated. A seton in the neck will be sometimes of use. It is of the utmost importance that the bowels should, in this disease, be particularly attended to: aloetic pills taken at bed-time, or, if the symptoms be urgent, the following potion may be taken to keep the body soluble: take of senna three drachms, lemon peel two drachms, tartrate of potash ten grains, water four ounces; which must be poured boiling on the ingredients, and when cold strain the whole for one dose. Diuretics are also serviceable. As the appetite is, in this disease, considerably deranged, it is of great importance that nothing but what is most nutri-

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cious should be taken; all food should be avoided which is likely to produce flatulence.

Beef tea (see that article) is one of the best liquids which can be taken where the patient evinces a dislike to solid food; notwithstanding, all thin and watery sops should be avoided. Should thirst be a troublesome attendant, simple toast and water, or lemonade, or the juice of acid oranges, may be given with advantage. In some diseases of this kind, an obstinate cough has been sometimes relieved by a teaspoonful of the expressed juice of garlic, given night and morning for some continuance; but we do not think it can be implicitly relied on. Opiates are sometimes useful. A proper attention to diet, and to keeping the body regular, or somewhat lax, seems to promise more than most other remedies in this disease. See ALIMENT, DYSPEPSIA, and ASTHMA.

BASTARD PLEURISY is a kind of rheumatic complaint, and is known by a dry cough, quick pulse, and a difficulty of lying on the affected side, which last does not always happen in the true pleurisy.

It generally goes off by keeping warm for a few days, drinking plenty of diluting liquors, and observing a cooling regimen. Sometimes, indeed, it proves obstinate and requires bleeding, with cupping, and scarifications of the part affected. These, together with the use of nitrous and other cooling medicines, seldom fail to effect a cure.

BAT, or *Vespertilio*, an animal which seems to fill up the chasm between quadrupeds and birds; with the latter, however, it has in common only the power of flying, for which it is provided with a smooth gauzelike web, serving the purpose of wings.

There are twenty-five species of this animal, of which only four are natives of Great Britain.

The animals of this genus fly abroad by night, feeding on moths and nocturnal insects. They are torpid during winter in cold countries, gathering together in dark caverns, adhering to

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walls, &c. They have a remarkable sense of avoiding objects in their way when deprived of their eyes.

The common bat in this country is about the size of a mouse. It devours a multitude of insects, particularly a species of white moth which flies about by night in the summer months; it should not, therefore, be destroyed.

The bats of warm climates are said to be by no means so harmless. The species called the *VAMPYRE*, which are sometimes one foot long, and the wing from tip to tip, expanded, four feet or more, are fond of human blood. Persons attacked by them are in danger of passing from a sound sleep into the sleep of death; this bat being so dexterous a bleeder as to insinuate its tongue into a vein without being perceived, it then sucks the blood till it is satisfied, all the while fanning with its wings in those hot climates in so pleasing a manner, as to cast the sufferer into a still sounder repose. In such climates where they exist it is, therefore, very unsafe to sleep in the open air. They do not confine themselves to human blood; in certain parts of America they destroy cattle. This animal is supposed to have given rise to the fables of the Harpies amongst the ancients.

BATEMAN'S DROPS, a quack medicine, which is certainly not devoid of importance. We are not advocates for quack medicines, knowing that they are, for the most part, impositions upon the credulity of the public; but, nevertheless, we shall lay before our readers, a short account of those which have been long known, and of whose efficacy there can be no reason to doubt.

Bateman's Drops are prepared in the following manner; take of fresh liquorice root sliced, of aniseeds bruised, of each two ounces; of water five pints. Boil these ingredients in the water till it is reduced to the measure of four pints; strain off the decoction; dissolve one drachm of opium in a quart of the strained decoction made warm; dissolve also one ounce of camphire in one quart of rectified spirits of wine:

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afterwards mix the whole together, and add of new England castor, of wild valerian root in powder, of each one drachm, of cochineal in powder half a drachm. Shake the whole well together, and keep it in a bottle closely stopped. It should be remembered, that whenever any of the drops are poured out of the bottle, the whole should be previously, and for a short time, well shaken.

Bateman's drops are given principally with a view to promote perspiration in rheumatism, and other pains in the limbs; and also in diarrhoeas, and old and obstinate coughs. The dose is a large table-spoonful in a quarter of a pint of hot ale, or other warm stimulating liquor. It is usually taken on going to bed.

BAT-FOWLING, a method of catching birds by night.

Bat-fowling may be performed either with or without nets. If without nets, some of the company carry poles, to which are bound little bundles of dry whisks of hay, or straw, or pieces of links, or hurds dipped in pitch or resin that will blaze; others have long poles rough and bushy at the upper ends, to knock down the birds which fly about the lights; and others with long poles beat the bushes, and other places, to make the birds fly about the lights, which they will always do when disturbed.

Bat-fowling with nets is performed as follows: two or three persons carry lanthorns and lighted candles extended in one hand, and in the other hand small nets, something like a racket, which must be fixed at the end of a long pole to beat down the birds as they sit at roost; they, being surprized at the blazing light, will sit still till they are knocked down. There is also another method of taking birds by night with nets, but it is not necessary that we should describe it.

BATH, in the general acceptation of the term, signifies a convenient receptacle of water, adapted to the various purposes of washing or cleansing, and bracing the body, either by plunging, or continuing in it for a certain time.

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The principal varieties of baths are denominated *salt-water, medicated, cold, cool, shower, tepid, warm, hot, and vapour baths.*

The *cold* bath possesses the ordinary temperature of the atmosphere, from above 32 to 65 degrees of Fahrenheit's thermometer; the temperature between that and the *tepid* bath from 65 to 85 may be called *cool*; the medium temperature of the *tepid* is 90; from 95 to 98 is denominated *warm*; and when it exceeds blood heat, or the ordinary temperature of the body, it is a *hot* bath, which is seldom used above 105 degrees. The *vapour*, or steam bath which may be considered only as a modification of the hot, is used from 100 to 130, which degree could not be endured in a denser medium.

According to the mode in which baths are employed, they are distinguished into *general* and *partial*. General, when the body is plunged, or immersed in water, to which the term *bathing* is more strictly applied; and when the water is thrown over the body by means of an apparatus, which causes it to descend in a shower, it is called a *shower bath*; when the lower part of the body is immersed in water, it is denominated *hip-bath*, or *semicupium*; and when the feet only are bathed, the bath is called *pediluvium*.

It was judiciously observed by Dr. Mead, that when a remedy is used *indiscriminately*, it must of necessity very frequently be used *improperly*. This observation cannot perhaps be more justly applied than to *Bathing*; as it is now well ascertained, that either the cold or warm-bath may be very beneficial to some, and extremely injurious to others, according to the nature of their complaints or constitutions. *Heat* and *cold* therefore, are neither strengthening nor debilitating in themselves, but become so merely in consequence of certain states of the body, at the time of their application. The same thing which in a strong person produces increase of strength, may tend immediately to debilitate the feeble; and a remedy which used with moderation, is a stimu-

lant, becomes rapidly destructive to vital power in an excessive dose. These observations are, it must be confessed, trite truisms, and as such are known and acknowledged by most intelligent persons; but nevertheless it is of importance that they should be brought immediately before the reader here: for although they are known, it is yet to be feared that, in numerous instances relative to health, and more especially to bathing, they are not acted upon.

Every one knows that the human body has a temperature uniformly above that of the atmosphere in our ordinary seasons: it admits of but a slight occasional alteration, and is nearly the same in the equatorial, and polar regions. Under the ordinary circumstances of health, the heat of the body indicates 98 degrees of Fahrenheit's thermometer; it is seldom materially reduced, even by sickness; but in some fevers it rises as high as 109: these alterations are unnatural, and are attended with a great waste of strength. The uniformity of temperature is sustained entirely by the vital powers, and the process appears to be carried on with the least expenditure of strength, when the atmospheric air indicates 60 degrees: every material deviation from this point, whether of heat or cold, if long continued, affects the constitution, and produces relaxation, or disease proportionate to the extent and duration of the cause. So that in this sense both heat and cold are directly debilitating powers to the human body.

If the body has been for some time exposed to a high degree of heat, the action of the blood vessels is increased, and the blood itself preserve its own temperature 98 degrees, by the evaporation of perspired fluids, both by the skin as well as by the lungs. Such expenditure, however, rapidly debilitates; and a bath at 60 degrees would be termed tonic, under such circumstances, by abating the excess of heat.

If the same person had been long exposed to a temperature below the freezing point, the power of life would

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be equally excited in keeping up the 98 degrees, but in a different way ; and there would follow an equal waste, and an equal debility : the same bath would then prove tonic, by arresting such exertion of the vital powers, and giving the constitution time to regain its wasted strength,—accordingly the temperature of snow is sufficient for stimulating or exciting the healthy action of frost-bitten limbs. To a person chilled by the ordinary temperature of our wintry rains, and more especially if of a weak habit, this same bath of 60 would, under these circumstances, still farther debilitate : in such a case, a tepid bath only would be tonic by its direct stimulus.

In very feeble persons who are not equal to support the expense of vital power, necessary for preserving the natural heat during winter, who are subject to cold fits, and generally chilliness, the warm bath is tonic, by an artificial supply of heat. If, however, the same person indulge too long in this luxury, he acquires a quantity of superfluous heat which generally increases perspiration, and thus exhausts the strength. To such persons, and in such a way the warm bath is debilitating.

The propriety, therefore, of bathing, and the mode of bath which may be admissible, are matters of no trifling moment ; and should never, in disease at least, be adopted, without due consideration, or perhaps, medical advice.

THE COLD BATH. In using the cold bath, it is of essential importance to know that there is no truth in the vulgar opinion, that 't is safer to enter the water when the body is cool, and that person heated by exercise and beginning to perspire, should wait till they are perfectly cooled. By plunging into it in this state, an alarming and dangerous chilliness is frequently felt, and the injury sustained, is generally ascribed to plunging into the bath too warm ; whereas it unquestionably arises from the opposite extreme. In short, it is a rule liable to no exception ; that moderate exercise ought always to precede cold bathing : for neither previous

rest, nor exercise to a violent degree, are proper on this occasion.

The duration of every cold bathing, applied to the whole body, ought, however, to be short, and must be determined by the bodily constitution, and the sensations of the individual : for healthy persons may continue in it much longer than valetudinarians ; and both will be influenced by the temperature of the air ; so that in summer it may be enjoyed for an hour, when, in spring, or autumn, one or two minutes may be sufficient. Under similar circumstances, cold water acts on aged and lean persons with more violence, than on the young and corpulent ; hence the former, even in the hottest days of summer, can seldom with safety remain in the bath longer than a quarter of an hour ; while the latter are generally able to sustain its impressions for a much longer period.

The head should first come in contact with the water, either by immersion, by being showered upon, or by covering it for a minute with a wet cloth, and then plunging head foremost into the water.

As the immersion will be less felt when it is effected suddenly, and as it is of consequence that the first impression should be uniform over the body, the bath ought not to be entered slowly or timorously, but with a degree of boldness. A contrary method in some constitutions is dangerous, as it propels the blood from the lower to the upper parts of the body, and thus predisposes to a fit of apoplexy. For these reasons the shower bath is attended with considerable advantages, because it transmits the water quickly over the whole body, and consequently is more consistent with the rules before mentioned.

The morning is the proper time for using the cold bath, unless it be in a river ; in which case the afternoon, or from one to two hours before sun-set will be more eligible. On the whole, one hour after a light breakfast, or two hours before, or four hours after dinner, are the best periods of the day for this purpose.

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While the bather is in the water, he should not remain inactive, but apply brisk and general friction, and move his arms and legs, to promote the circulation of the fluids from the heart to the extremities. It should not be forgotten that it is extremely imprudent to continue in the water till a second chilliness attacks the body.

Immediately after leaving the bath, it is necessary that the bather, with the assistance of another person for dispatch, should wipe his body dry with a coarse clean cloth. He should not afterwards sit inactive, or enter a carriage, unless warmly clad, and wearing flannel next the skin; if season and circumstance permit, it will be more proper, and highly beneficial, to take gentle exercise till the usual circulation, and the customary action of the muscles, be restored.

The best place for cold bathing is the sea, or a clear river: and where neither of these can be conveniently had, we recommend the shower bath.

The principal advantages to be expected from cold bathing in a medical point of view, are either the reduction of excessive heat, or the producing of a salutary re-action of the system. In the former it has been found useful in several fevers, where the temperature of the body is increased above the natural standard; but affusion in those cases is more advisable, and more efficacious in reducing the morbid temperature than immersion; this practice will of course require considerable judgment and attention, and will depend upon the following circumstances. In fevers, the cold affusion must not be employed in the cold stage. As soon as the hot fit is formed, the cold affusion is to be used immediately, and repeated occasionally. In the sweating stage it is to be cautiously avoided.

The fevers in which this practice has been adopted with advantage, are typhus, intermittents, and scarlatina.

The cold bath is also said to have cured *tetanus*, or locked jaw; *epilepsy*, *hydrophobia*, and *insanity*. But however, we do not believe that in these

cases it can be implicitly relied on. In nervous diseases too, the cold bath has sometimes been of service.

In gouty and rheumatic complaints, in diseases of the hip joint, lumbago, or sciatica, after the removal of those complaints by the use of the vapour, or hot bath, and in conjunction with other remedies, the alternation of the cold with the vapour bath, fortifies the constitution against a return of such attacks. In gouty inflammation, the application of cold water has been much recommended by Dr. Kinglake, a physician of undoubted talents, but it is, notwithstanding, by no means generally adopted, it should be made with great caution, if at all.

The cold bath is injurious, when the powers of life are very considerably reduced, and the heat of the body below the natural standard. In general plethora, or a fulness of the vessels, and in inflammatory diseases of the more important viscera, such as the heart, the lungs, the liver, &c. the cold bath is esteemed injurious, however high the feverish heat which accompanies such diseases may be raised. The unconquerable dread which cold bathing sometimes inspires, and which no effort of the mind can overcome, forbids the use of it. Numbers of invalids, delicate females, puny, richets, and young children, who crowd the watering places in the bathing season, are materially injured by the unadvised and injudicious use of this powerful application.

SEA-BATHING has frequently received the credit of a cure which was entirely owing to the change of air; and many times unsuspectedly, the gradual and permanent application of the cold bath has laid the foundation of many chronic diseases. Its utility in scrofula, and glandular swellings of the neck, is extremely doubtful. The injurious tendency of sea-bathing, where the patient's vital powers are so deficient that re-action does not follow the immersion, admits of no question. The use, however, of the tepid salt-water bath, or indeed of sea-bathing

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itself, when the water is warm, (i.e.) between 60° and 80 degrees of heat, is in many cases beneficial, when a colder temperature would be decidedly injurious.

It may be satisfactory to know, that in situations distant from the shore, where sea-water cannot be had, *artificial sea-water*, made by dissolving a pound of bay salt in four gallons of fresh water, possesses all the properties of the water of the sea; a small portion of sulphate of magnesia excepted.

THE SHOWER-BATH. The cold shower-bath is less alarming to nervous persons, and less liable to produce cramps, than cold immersion: it may be considered as the best and safest mode of cold-bathing, and is recommended in some nervous complaints with good effects.

It has afforded relief in some cases of insanity: whilst the cold shower was pouring upon the patient's head, the whole body was immersed in a warm bath.

THE COOL-BATH is that in which the water exceeds the temperature of 65 degrees, and till it arrives at 85. A bath of this temperature is seldom employed; except preparatory to the cold-bath. The best preparation for cold-bathing, is to begin with a warm, then a tepid, and afterwards a cool-bath; after this course, the bather may in general plunge with safety into the cold-bath. In most cases a bath every second day from the commencement of the warm-bathing, to the end of a fortnight, will be sufficiently frequent; afterwards the cold immersion may be continued daily; but the bather should never remain above two or three minutes in the water.

THE TEPID-BATH. On immersing the body in a tepid bath, which takes its range from 85 to 95 degrees, no striking sensation either of heat or cold is felt. The sensation of heat or cold, which a person may feel on immersion in water, will depend upon the degree of heat or cold to which the body has been previously exposed, or on the actual degree of heat at which the body is: thus a person much chilled, will,

on entering the tepid-bath, feel the water warm, while another who has been heated by exercise, will find it sensibly cold.

The tepid-bath is attended with several advantages: the surface of the skin is by it freed from that scaly matter, which always collects more or less in the healthiest person; the pores of the skin being thus free, the natural perspiration is promoted, the limbs are rendered supple, and any stiffness which may have been produced by exertion, or fatigue is removed. Such immersion has been found to allay thirst; a proof that a quantity of water is absorbed, and enters the body through the skin.

The tepid-bath seems the best adapted to the purposes of cleanliness, and healthy exercise. To delicate females, and young children, it is of primary importance. Nothing can be more absurd than the common practice of mothers and nurses in washing children, no matter how sickly or unwell, with cold water, under the idea of bracing the constitution: whereas, the tepid-bath, or even the use of tepid water alone, is not only the most agreeable, but the most proper fluid to excite the energies of the system in young children.

That a due attention to a strict purity of person is of the utmost importance can not be denied. When the matter thrown out upon the surface of the skin, is suffered to accumulate, perspiration is obstructed, and this matter is, with justice, supposed to give rise to a variety of cutaneous and other disorders, which may be prevented, as they are now known to be cured, by bathing in simple warm water. We, therefore, cannot too strongly recommend the tepid bath.

Affusion with tepid water, has generally the same result, except, that if the body continue exposed to the air after the affusion, a sensation of cold is produced, which ought to be avoided, by wiping dry the upper part of the body when rising out of the bath, whilst the lower extremities are still covered with the water.

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The tepid affusion is applicable to all the diseases to which the cold affusion may be applied, and is generally preferred when there is doubt of the strength being sufficient to produce the re-action, (i. e.) the glow of heat experienced after the cold immersion. It possesses very considerable efficacy; it is safe, easy of application, in a high degree grateful, and may be extended to almost the whole class of febrile diseases.

The use of tepid bathing for infants has been already mentioned; the advantages of this bathing to pregnancy, are not confined to lightening the load of gestation, but extend even to the very hour of delivery. The great tension of the body from the increasing bulk of the fœtus is prevented, the bowels are preserved in a free state; and above all, a pliability of fibre is created, which diminishes resistance, lessens the pains, and shortens the period of actual parturition, and by these means, secures from danger the objects of our tenderness in the most interesting moments of their lives.

During the period of puberty, which with females is usually completed in about two years, sea-bathing should be avoided, but the tepid-bath may, at this time, be used with great advantage.

There can be little doubt that human existence by tepid-bathing, temperance, and proper exercise, may be made more agreeable, and also be prolonged.

THE WARM-BATH. On entering a bath from 95 to 98 degrees an agreeable sensation of warmth is experienced, and this sensation is more striking in proportion as the body has been previously cooled. The frequency of the pulse is always decreased, inasmuch that a natural pulse has, after immersion for one hour and a half, been reduced nearly twenty strokes in a minute; the animal heat is also in most cases diminished; the absolute weight of the body after immersion is found to be increased, notwithstanding the perspiration which commonly takes place. The patient feels languid, and

a desire to repose, although the spirits are exhilarated, and any previous irritability allayed.

It has been generally thought, that one constant effect of the warm bath is to relax and debilitate the body, but this idea is now admitted to be founded in mistake. Some particular constitutions may be so affected, but this has been attributed either to the heat of the bath having been too great for them, or the immersion having been continued for too long a time.

At Bath many of the guides remain for several hours every morning nearly up to the neck in the warm bath, without being either relaxed or weakened by it, but on the contrary, they are, in general, a robust, vigorous, and long-lived race of persons.

When the warm bath is intended to produce increased perspiration, it is best employed in the evening, when the immersion should not exceed ten minutes, and the patient should be removed from the bath to a warm bed. When it is not intended to excite perspiration, any time, from an hour after breakfast till dinner will be proper; in these cases the bathing may be protracted to fifteen or twenty minutes, according to the feelings of the patient; gentle exercise in the open air should be afterwards employed. It is an error to suppose that persons who have been immersed in the warm bath, are more liable afterwards to take cold: for the body is better able to resist the action of cold immediately after coming out of a warm bath than perhaps in any other given situation.

The warm-bath, besides its use as an ablution, has been beneficial in St. Vitus's dance, strangulated Hernia, Tetanus, the Influenza, diseases of the skin, &c. &c.

THE WARM MEDICATED OR SULPHUR BATH. When this is employed it is generally supposed that the impregnating matters produce, on the system, effects similar to those which would follow their internal exhibition; that in some instances this is the case cannot be denied; but in most cases

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the effect is very trifling. Immersion in a sulphureous warm bath commonly produces an increased perspiration; and a similar use of a chalybeate bath especially, if it contain any aluminous impregnation, is followed by a corrugation of the skin, and an increased action of the vessels. These can be readily explained; but it is not easy to conceive how alkaline, or earthy salts, should produce any remarkable effect: for it is not known that they can enter the system by the pores of the skin; indeed, that they are not absorbed is evident from the circumstance that even sea-water will allay thirst, merely by wetting the surface of the body with it: it is, therefore, reasonable to conclude that the advantages of sea-water over fresh, as a bath, have been much exaggerated, and depend rather on irritation of the skin than upon any absorption of the materials. It should not be forgotten also, that the *warm salt-water* bath has been found injurious in almost every species of cutaneous disorders, in consequence of the irritation produced by the particles of salt deposited on the skin.

This kind of bath has been found decidedly beneficial in many diseases of the skin, particularly in children, in surfeit, in elephantiasis, leprosy, &c.

The following recipe for a medicated bath has been successfully used in a variety of cutaneous disorders, from the slightest eruption on the face and skin to the most obstinate scorbutic complaints approaching to leprosy. It is said to be the medicated bath used by Buonaparte, and is prepared thus:

To produce water similar to that of the *Source Royal* at *Barege*, take for every gallon of water which you wish to impregnate, two grains of alum, two grains of carbonate of lime, two grains of hard Spanish soap, four grains of muriate of soda, twenty grains of dried carbonate of soda, and sixteen grains of the sulphuret of potash; grind the materials together, and boil them in as much water as will dissolve them; stir them over the fire till the sulphu-

rated hydrogen gas is disengaged, which is known by a smell similar to rotten eggs; then mix the ingredients with the water-bath previously prepared. When this combination is formed, and the proper degree of heat added, we may expect every salutary effect by this artificial water as certainly as if used at its natural source.

THE HOT-BATH is that which has a temperature of 98 or 100 degrees, and is occasionally increased to 110 or 120 and upwards, according to the particular nature of the case, and the constitution of the patient. No prudent person, however, should have recourse to a hot bath without medical advice.

The effects of the hot bath differ in several particulars from those of the warm bath. The sensation of heat experienced on entering a bath above 98 degrees is, in general, very striking and permanent. The pulse is increased in frequency and force; the superficial veins become turgid; the face is flushed; the respiration quicker than natural, and sometimes hurried and laborious; and the perspiration is increased. If the heat of the bath much exceed 98 degrees, or if the immersion be continued beyond a few minutes, the determination of blood to the head is greatly increased; the arteries of the neck and temples throb violently; a sensation of anxiety at the breast comes on threatening suffocation; the person grows giddy and feels a fluttering at the heart. If these warnings of approaching danger be not attended to, the bather soon becomes insensible, and is carried off by apoplexy.

From the effects produced by the hot bath, it appears that this remedy is a powerful stimulant, to be employed only in cases where the ordinary stimulants are ineffectual, accordingly it is seldom resorted to in medical practice; and almost the only cases in which the general hot bath is employed, are those of confirmed and obstinate palsy; but its use is now almost superseded, except at Bath and some other hot springs, by the vapour bath. See below and the article BATH WATERS.

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Water of this high temperature is scarcely ever employed in the way of affusion, nor is such an application likely to be attended with advantage, except in some paralytic affections of the limbs: in these cases it is not unusual at *Bath*, and other hot springs, to pump the hot water on the affected limb. By this dry *pumping*, as it is generally called, the hot water is applied to the affected parts, under a higher temperature than when it is drawn off into the reservoirs commonly employed for bathing.

THE VAPOUR-BATH, used in this country, is simple in construction and effectual in its application. It is an apparatus to which the steam of boiling water, either simple or medicated, is conveyed through pipes from a common *digester* or *steam-boiler*, modelled from one invented by the honourable Basil Cochrane. In this apparatus the stimulant power of heat is modified and tempered by the moisture diffused through the air; and as the elastic vapour, like air, is a less powerful conductor of heat than a watery fluid, the effect of vapour in raising the temperature of the body is much less than that of the hot bath. Its heating effects are also further diminished by the copious perspiration which ensues; so that, on every account, the vapour-bath is safer, it being, in most cases, more effectual than the hot-water bath, and may be employed with success where the hot-bath would be attended with danger. It may be applied also to the whole, or to any part of the body. To effectuate this, the steam is conveyed from the digester, or steam-pot, through a leaden tube into a waggon-roof frame, which may be made of hoops of whalebone, wood, or cane, forming a cradle, resembling that used by surgeons to keep the weight of the bed clothes from pressing on fractured limbs, which is laid over the patient in bed, precisely as the cradle over the fractured limb, under a blanket, or other covering, to confine the steam.

The Vapour-bath has been lately strongly recommended in all cases of

fever, where a determination to the skin is particularly desirable. The more general and immediate effects of this bath in fever is, that it disposes to a calm and sound sleep, and regulates the discharge by the skin: the increase of the symptoms, sooner or later in the evening, is lessened, if not prevented; the head is preserved from delirium, and the symptoms are moderated, till the disease terminates. It has been also found beneficial in inflammation of the bowels, complaints of the liver, hydrocephalus, dropsy, glandular swellings of the neck, calculous complaints, gout, leprosy, white swelling, strangulated hernia, several affections of the skin, &c.

The temperature necessary for the vapour-bath, and the time for using, and remaining in it, must depend upon the purpose for which it is designed. From ten minutes to a quarter of an hour is, in general, sufficient; but there may be cases where half an hour, or even an hour may be necessary; the temperature from 110 to 120.

The best time for using this bath is in the morning, or at any period before dinner; after the body is properly dried and rubbed, the cool air is grateful and perfectly safe; there is no danger whatever from cold: we are less liable to take cold after warm and vapour bathing than at any other time. It must not be concluded, however, that immediate exposure to external air, in all circumstances, after warm or vapour bathing, is safe: there are exceptions in several states of disease, where the object is to insure and increase perspiration. In such cases it is obviously our business to remove the patient to bed. But when the bath is used for cleanliness, refreshment, or as a luxury, the rule admits of no exception.

We will here recapitulate, for the advantage of our readers, our directions on the important subject of bathing generally:

Whenever the cold bath is deemed proper, the warm, tepid, and cool bath,

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should be first used as a preparative; the patient should remain in, the first and second time, for ten minutes, and only immerse the body for a minute or two, when he proceeds to use the cold bath. The bather, should always go into the cold bath when warm, and seldom exceed one plunge; which produces a glowing and healthful appearance of the countenance, and an additional flow of spirits; when these are not produced, the cold bath should not be repeated. In some cases, attended with a fulness of habit, it may be necessary to bleed, or take a dose of medicine, previously to the use of the bath. In hysteria, epilepsy, insanity, hydrophobia, and other convulsive disorders, the cold bath has been used with advantage; but in these complaints it should be used during the paroxysm.

In all disorders affecting the head with pain, giddiness, sense of fulness, hydrocephalus, and deafness; in all diseases of the breast, in asthma, catarrh, water on the chest, and every species of consumption, in indigestion, (dyspepsia) chronic pains in the stomach and bowels, in all internal inflammations, of the liver, spleen, kidneys, intestines, &c.; in gout, rheumatism, diseases of the joints, acrofula, glandular swellings, in every kind of dropsy, and in all eruptive and cutaneous diseases, in early infancy, in every period of pregnancy, and, in advanced life, the cold bath is injurious.

On the other hand, the warm and vapour bath properly regulated, will be found principal agents in the cure of most of the foregoing disorders; in eruptions of every kind; in cedematous swellings of the limbs, in stiffness, and contractions of the joints; in all those disorders called nervous; in every case requiring a course of mercury; in early infancy, in the latter period of pregnancy, and in the decline of life to the last stage of existence, the warm and vapour bath may be used with advantage and safety. In a plethoric state of the body, or where there is much determination to the head, previously to the use of the warm or vapour bath,

steps must be taken to remove the plethora, or to relieve the head.

It now only remains to make a few observations relative to public bathing. Floating baths are stationed in different parts of the river Thames, to accommodate those persons of the metropolis who may be desirous of bathing; but the trouble and inconvenience of proceeding to them, prevents their being used to any great extent: a common practice with many of the youths of London is to hire a boat, and the waterman attends them wherever they go; but it is obvious that such bathing is dangerous, and can only be adopted by persons who can swim. A more common, but a more disgusting method, is to bathe in the New River; here, in the summer, in the neighbourhood of Islington and Newington Green, great numbers plunge daily into the aqueduct to the great annoyance of the passengers on its banks, and to the disgrace of the New River Company, who permit such ablution in a stream from which such a large portion of the metropolis obtains that fluid so useful, nay, so essential to life. Surely if such indecencies cannot be prevented, it would be deserving the attention of the first metropolis in the world, to provide a canal, or stream for the bathing of its inhabitants, where no decency would be shocked, and where a moderate depth may secure against accidents from drowning, and where also a constant change of the water may be effected, so as to make this exercise, and mode of ablution, both pleasant, salubrious, and safe.

From what has been said it is evident that all *stagnant water* must be improper for bathing: it should be either that of a river, a running stream, or the sea. Or, if it be that of a bath in a private house, the water should be changed every day. No lead ought, by any means, to form the lining of a bath.

Bathing is not permitted in the Thames, at London, before a certain hour in the evening, nor after a certain hour in the morning.

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BATHING OF HORSES has not, as far as the practice has been hitherto carried, had much effect in any disease to which the horse is liable. It can scarcely, however, be doubted that the judicious application of cold, as well as warm bathing, must be, in many cases, of service. The diseases to which it may be applied with the greatest chance of success, are those termed spasmodic, and which have resisted all other remedies. Cold bathing for horses in health, is unquestionably of service, by cleansing the skin, and exciting the action of the surface; but the horse should be immediately afterwards either rubbed dry, or gently ridden till he become so: the last is beyond a doubt the preferable mode.

BATH WATER. This water arises from springs almost in the centre of Bath, in Somersetshire, one of the most elegant, and well-built cities in the world. There are three principal springs in this city, namely, the King's Bath, the Cross Bath, and the Hot Bath: all within a short distance of each other, and emptying themselves into the river Avon, after having passed through the several baths. Their supply is so copious, that all the large reservoirs used for bathing, are filled every evening with fresh water from their respective fountains. In their sensible and medical properties, there is but a slight difference. In specific gravity, the water of the King's, or hot; and that of the cross bath, exceed all other cold or warm springs in that city, the former being one-tenth, the latter one-twelfth part of a thousand heavier than the water in the Avon.

These waters have a higher temperature than any other in Britain, and are the only springs which are sensibly hot to the touch. All other waters in this island being below the temperature of the human body. The temperature of the king's bath, which is usually preferred for drinking, is, when fresh drawn in the glass above 116°; that of the cross bath 112°. But after flowing into the spacious baths, it is generally from 100 to 106 in the hotter baths,

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and from 92 to 94 in the cross bath. They are of course very celebrated.

Chemical analysis, shows the water to contain a quantity of calcareous salts, which render it hard, and unfit for domestic purposes; that it holds in solution but little, if any neutral alkaline salts, and therefore is scarcely saline; that it is in a very slight degree impregnated with carbonic acid; in a still slighter with iron, and, as it appears, only when hot from the spring; and that it holds suspended a small portion of siliceous earth.

From the trivial powers which the most industrious chemical analysis has been able to detect in Bath water, and the active and decided advantages which are found to result from its use in a variety of diseases, there can be no doubt that it possesses an energy which we are yet incapable of tracing: for we are not justified in attributing its efficacy to the heat alone, although no doubt that has a considerable share.

The diseases for which these waters are resorted to, are very numerous; in most of them the bath is used, whilst the water is taken as an internal medicine. The general indications for the use of this medicinal water, are in cases where a gentle stimulus is required. The cases to which it is more particularly suited, are mostly of the chronic kind. It is recommended in chlorosis, in complicated diseases, brought on by a long residence in hot climates, affecting the secretion of the bile, the functions of the stomach, and alimentary canal; in dyspepsia, from a long course of high and intemperate living; in jaundice, in gout, rheumatism untended with inflammation, and several disorders which give rise to many varieties of palsy.

From what has been said relative to bathing, in a preceding article, it becomes the less necessary to enlarge here. A patient labouring under any particular disease, would scarcely venture on a course of bathing in this water, or of drinking it without consulting some medical practitioner.

BAUME DE VIE, a quack medi-

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cine long known to the British public, and is thought of so much importance by the faculty, as to be now admitted into the London Pharmacopœia, under the name of *compound decoction of Aloes*. It is prepared in the following manner: take of extract of liquorice, half an ounce, subcarbonate of potash, two scruples, extract of spiked aloes powdered, of myrrh powdered, and saffron, of each one drachm, of water one pint. Boil together down to twelve fluidounces, and strain; then add of compound tincture of cardamoms, four fluidounces.

Baume de Vie is gently cathartic and emenagogue. It may be given with advantage in habitual costiveness, dyspepsia, hypochondriasis, jaundice and chlorosis, in the dose of from half a fluidounce to two fluidounces, taken in the morning.

BAY-BERRIES, the seeds of the Laurel, *Laurus nobilis*, are imported from Italy, and other countries bordering on the Mediterranean. They are stimulant and carminative, and were formerly given in flatulent cholera, hysteria, and obstructed menstruation, but their internal, as well as external use is now almost wholly abandoned. They are, however, frequently given to horses and cattle, as an aromatic stimulant, in diarrhoea, and other disorders of the stomach and bowels. The dose in powder to these animals, is from one to two ounces; but they are more frequently combined with other medicines. Bay berries are an ingredient in the stomachic powder of farriers, called in the shops, *Diapente*, which see.

BAY-SALT, a kind of brownish impure salt, obtained in France, Italy, and other countries, by evaporating sea-water in clay pits. The principal part, however, of the bay salt which is sold in Great Britain, is of home manufacture, being a coarse grained crystallized salt, made dirty by powdered turkey umber, or some such colouring material, to imitate the foreign article. The only utility which this salt appears to possess, beyond that of the common fine-grained salt universally found in

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the shops, is, that it dissolves more slowly by moisture, and therefore is better calculated for the salting of fish, and other animal matter, which cannot be wholly covered with brine. The constituent parts of both are the same, viz. soda and muriatic acid; its common chemical name is therefore, *muriate of soda*. See SODA and SALT.

BAY-TREE, or *Laurus*, is an elegant tree, of which there are thirty-four species, chiefly natives of the East and West Indies, or South America, and one or two of the south of Europe. The following are the chief.

Laurus nobilis, LAUREL, an evergreen, a native of Italy, and the south of Europe, is cultivated in this country, and is common in our gardens and shrubberies. It flowers in April and May; it is a handsome evergreen, and although it generally appears as a shrub in England, yet in its native soil and climate it rises to twenty or thirty feet in height. The bark is smooth, and on the younger branches, of an green olive colour. The leaves are lanceolate, about three inches long, and an inch and a half broad, and of a deep green colour. This is the laurel of honorary memory, the distinguished favourite of Apollo; but its medical uses are of no great moment. See BAY-BERRIES. Water distilled from the leaves, shews traces of Prussic Acid, the most powerful of poisons; see that article; we have heard of sheep being destroyed by eating them: the use of them in pastry should therefore be avoided.

This laurel is best propagated by layers.

Laurus Cinnamomum, CINNAMON TREE, is a native of Ceylon, growing in great abundance in many parts of the island, particularly near Columba. It also grows plentifully in Malabar, Cochín China, Sumatra, and the eastern islands. It has been cultivated in the Brazils, the Mauritius, and other places. France is partly supplied from Guiana. It seldom rises above thirty feet in height; has a slender branching trunk, covered with a brown ash-coloured cuticle; from the root

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A number of suckers, which form a bush round the trunk. The leaves are from six to nine inches in length, oblong, pointed, and trinerved; they have a spicy odour, and a hot taste when rubbed and chewed.

Ten varieties of this tree have been enumerated, four of which only are said to be barked: viz. the *sharp sweet cinnamon*, which is the finest sort.—*Snake Cinnamon*, similar to the first.—*Camphorated cinnamon*, so named from its smelling of camphor, and the root yielding camphor by distillation; and *bitter astringent Cinnamon*.

The trees which grow in the valleys in a white sandy soil, are fit to be barked when four or five years old, but those in a wet soil, or in shady places, require to be seven or eight years of age. The bark is good for nothing, if the tree be older than eighteen years. It was formerly propagated by a species of pigeon, which ate the fruit, and voided the seed; but it is now raised from the berries regularly sown.

The barking of the cinnamon-tree, commences early in May, and continues until October. Branches of three years old, are selected, and lopped off with a pruning knife, or bill hook. A longitudinal incision is made through the bark on both sides of the shoot, so that it can be gradually loosened, and taken off entire, forming hollow cylinders. It is then tied up in bundles, and remains twenty-four hours, by which a fermentation is produced, which facilitates the separation of the epidermis, which, with the green pulpy matter under it, is carefully scraped off. The bark now soon dries, contracts, and assumes the quilled form, after which the smaller pieces are put within the larger. The cinnamon is then tied up in bundles of 30lbs. weight. It is brought to this country in bags, or bales, weighing 92lbs. each, and in stowing it, black pepper is mixed with the bales to preserve the cinnamon.

Oil of cinnamon is prepared by macerating the bark in sea-water for two days, then distilling with a slow fire, and separating the oil from the

water with which it comes over, and in which, being heavier than water, it sinks. This oil is too often adulterated with spirits of wine, or expressed oil; if with the former, on dropping it into water, the water will become milky; if with the latter, by dropping it into spirits of wine, the expressed oil will separate. *These tests will be found useful for determining the genuineness of almost all essential oils, when adulterated with spirits of wine, or expressed oils.* But if the essential oils are adulterated with one another, we know of no criterion to detect the adulteration, except the smell and taste.

Cinnamon has a fragrant odour, and a pungent aromatic taste. The best is rather pliable, and breaks into splinters, it is commonly of a browner colour than cassia, and considerably thinner.

Cinnamon bark is astringent, cordial, and tonic; hence it is found efficacious in alvine fluxes, proceeding from a weakened and languid state of the intestines, dyspepsia, and chronic nervous debility; when given in the form of watery infusion, it removes nausea, and checks vomiting; it is also of use to cover the nauseous taste of other medicines. The oil is a powerful stimulant and stomachic, and is used as such in cramps of the stomach, flatulent cholice, hicough, and nervous languors. It is also sometimes inserted, dropped on cotton, into the hollow of a decayed tooth, to allay the tooth-ache. Twenty drops of the oil on lump sugar, dissolved in half a pint of water, make an elegant cinnamon water, superior to what is commonly met with in the shops, that being generally distilled from *Cassia buds*. If a little rectified spirits of wine, or brandy be poured on the sugar, after the oil is dropped on it, and before it is dissolved in the water, it will mix better.

The dose of cinnamon in powder, is from ten grains to one scruple; of the oil, from one drop to three on a lump of sugar.

The preparations of cinnamon, ordered by the London College, are all of the same nature as the bark and oil.

• BARK

Of the domestic uses of cinnamon, as a spice, it cannot be necessary to speak: but the domestic economist should not forget that as cinnamon contains an essential and volatile oil, boiling, or baking will dissipate it more or less, and therefore if possible, this spice should not be subjected to such a process; but, if it be desired, should be added in powder afterwards.

Laurus Cassia, the CASSIA TREE, is a native of Malabar, Ceylon, Sumatra, and Java; and has been generally supposed to be rather a variety of the cinnamon, than a distinct species of the *Laurus*. It, however, rises fifty feet in height. It has many of the habits of the cinnamon tree, and is barked in much the same manner.

The odour of Cassia bark, is similar to that of cinnamon, but fainter; the taste is more pungent, but less agreeable, and without the astringency manifest in chewing cinnamon; and some cassia, but certainly not all, becomes slimy in the mouth after being chewed. It is of a cinnamon colour, but somewhat lighter, and more uniform, and in pieces more or less quilled. It is considerably thicker than cinnamon, breaks with a short fracture, and is more uniform in its length.

Cassia buds have the same odour, and taste as the cinnamon bark, except the astringency. They are of a brown colour, and resemble a nail with a round head, surrounded with the hexangular calyx, which gradually terminates in a point. Both the bark and buds, yield in distillation with water, an essential oil, similar to that of cinnamon, on which their qualities depend. Indeed, relative to the oils of cassia and cinnamon, we know of no difference; and in commerce, oil of cassia is now constantly sold, as oil of cinnamon. See CINNAMON.

Cassia buds and bark are stimulant cordials; and are used in the same cases, and in the same manner as cinnamon bark; but they are considerably cheaper in price, and on this account often supersede the true cinnamon in medical

practice. Cinnamon, however, as a medicine should unquestionably be preferred.

Laurus Camphora, CAMPHOR TREE, is a native of Japan, and yields camphor, although the camphor which is brought to Europe from Sumatra, is not the produce of this tree, but of the *Dryobalana Camphora*, a tree belonging to a different genus altogether from the laurel. See CAMPHOR.

Laurus Persea, ALLIGATOR PEAR TREE, is a native of the West Indies. Its fruit is pear-shaped, and from one to two pounds weight, and is an agreeable article of diet. Its pulp is harder than butter, and from its similarity of taste, is called vegetable marrow.

Laurus Benzoin, BENJAMIN TREE, is a native of Virginia, rising from fifteen to twenty feet in height. It is sometimes confounded with the true Benzoin-tree, which is the *styrax benzoin*. See STORAX.

Laurus Sassafras, SASSAFRAS TREE, is also a native of Virginia. The wood affords the sassafras of the shops. (See SASSAFRAS.) This, and the preceding species, may be cultivated by the seed preserved in sand, and sown early, in the spring, one inch deep, in large pots. They require a soil taken from a rich pasture, with the sward one year before it is used. About the middle of March, the pots should be taken up, and placed in a good hot bed, soon after which the plants will appear. They should be well weeded, and watered. At the approach of cold weather, in Autumn, they should be sheltered under a frame, and replaced in the hot beds in the ensuing spring. After having been thus managed for three years, they should be taken out of the pots, and planted in the nursery ground, where they may remain till strong enough to be transplanted. Such plants may also be increased by layers, although slowly; the young twigs should be laid in the ground in Autumn, and by twisting a wire round them, so, as to stop in some degree the circulation of the sap, and stripping off a little of the bark with a knife, they speedily acquire firm roots.

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Laurus Caustica, a poisonous tree of Chili.

Laurus Estivalis, DECIDUOUS BAY, a native of Virginia, with small white flowers, succeeded by red berries.

Laurus Indica, INDIAN BAY, grows from twenty to thirty feet high; its flowers are whitish, succeeded in its native soil, by large oval black berries. A native of Madeira.

BEAN, a species of *Vicia*, of which there are several sorts, commonly sown in our gardens: the small Lisbon, or *Mazagan*, the *Spanish*, the *Sandwich*; and the *Windsor* beans; there is also a sort very productive, called *Long pods*, others called *Mumford*, and the *Token*; and another, which is *green* after being boiled.

The first sort should be planted in October or November, under warm walls or hedges, where, if they stand through the winter, they produce beans early in the spring. They may also be raised very close in beds, and covered with hoops and mats in winter, and planted out in the spring. The Lisbon bean is preferred to the Spanish: and the curious generally have fresh seed from abroad, as they are apt to degenerate, if not in goodness, yet in earliness. The Spanish beans are not to be planted till Christmas; but the Windsor, which are very liable to be injured by cold, about the middle of January. They should be planted at the distance of two feet and a half or more, from row to row, and four inches from one another in the rows: and, after this, a new plantation should be made every three weeks, till the middle of May, that there may be a succession of crops. The Sandwich beans are hardier than the Windsor, and may be planted to come in between the early crops and them.

It has been found advantageous to cut off the tops of the bean stalk when the first blossom begins to drop: for as soon as the tops are cut off, the pods rapidly increase in size, and the period of ripening is accelerated.

Beans will grow best on any of the stronger kinds of soil: they thrive equally well in stiff clayey lands, and

the strong loamy kinds: but they do not thrive in light, or dry lands.

Besides the garden beans above mentioned, there are several other varieties cultivated in the fields, called *HORSE-BEANS*, and great and small tick beans, for the purpose principally of feeding horses and other animals.

Bean crops may be grown after wheat and oats, as well as on such lands as have been newly broken up from the state of ley; and also after clover, and other seeds. They may be cultivated on the leys with great propriety and advantage, when danger is apprehended to the corn from grubs, or other insects; and they may be also of further utility, in promoting the decay of the sward, and the destruction of weeds by the shade and smothering closeness, which they produce on the surface of the ground. They may, however, be cultivated after most sorts of vegetable productions, but from possessing a tap root, they may be grown most beneficially in succession to those plants, which are of the fibrous-rooted kind.

The common method of preparing the soil for the reception of the bean crop, is merely to give one ploughing; at the period when the seed is to be put into the ground in the spring month. But it is a much better practice to plough the land into ridges, about two feet and a half, or three feet in width, as early as possible in the autumn, after the manure has been applied, which should be constantly laid on, when beans are sown after grain crops; in which state it should remain until the period of planting.

In these cases, the land should always be ploughed into that form which suits the particular method of sowing; when the crop is to be drilled, the ridges should be of the exact breadth which suits the drill machine; where dibbling is used, that which is proper for the operation of the scuffler, or scarifier. Where, however, the drill culture is adopted, more frequent ploughing will be requisite; but a better practice is that of using the scarifier, and scuffler.

The time of sowing depends upon

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the climate and situation. In the mild and southern districts, they may be planted or sown in January; in exposed situations, as early as it can be accomplished in February. But in the more northern parts of the kingdom, March may be more suitable.

Where the *broadcast* method is pursued, from three and a half to four bushels is the quantity commonly allowed to an acre; but this mode should never be attempted where other, and better methods can be adopted. Under other methods of putting in beans, a much less proportion of seed is required, the quantity varying according to the distance of planting, from two to three bushels and a half to the acre; or in some cases, perhaps rather more of the small sorts, and five or six of the large kinds. When planted in rows at the distance of two and a half feet, the quantity of seed most proper, is about two bushels to the acre; but when put in rows at fifteen or eighteen inches apart, it will require three bushels and a half, or rather more.

In some of the more southern districts, the bean crop is planted in rows by means of a line and dibble, which, though an expensive, is greatly preferable to any of the methods of broad cast, both in admitting the land to be kept clean, and in the economy of seed. The rows are usually, in this method, about one foot distant, and the beans are deposited in holes, about two inches apart. In other places, they are planted with the dibble without any order. But it is now generally admitted, that the best method of planting beans is to drill them, at least on the drier and more mellow soils. The distances of the rows by the drill method, are from twelve inches to twenty-four; but the best distance is, perhaps, sixteen or eighteen inches.

When the broad-cast method has been adopted, it is scarcely possible to adopt any method during the growth of the crop which shall promote its growth. But when the crop is planted in rows, either by the drill, dibble, or other method, the ground admits of

being, and should be frequently stirred, and laid to the roots of the plant with the hand, or horse-hoe; and, of course, it should be kept free from weeds, upon the proper performance of all which, the perfection of the cultivation of the bean consists.

There is a circumstance of great importance in the management of beans: it is well known that beans are an excellent preparation for wheat; but it is often so late before they can be cut down and carried to the stack-yard, that the season for sowing the succeeding crop to advantage, is often lost. This may be prevented by the simple expedient before mentioned, of cutting off the tops of the beans, in order to accelerate their podding. At a certain stage of its growth, the head of the bean-stalk does not appear essential to its vegetation, but by its luxuriance, exhausts the powers of the plant. The proper time to cut off the top is when the first blossoms begin to drop; if done sooner a fresh shoot will be put forth. As soon as the tops are cut off, the pods rapidly increase in size, and the period of ripening is advanced. The timely removal of those parts, where the insects chiefly lodge, particularly the Bean-fly, materially contributes to the health and vigour of the plant, and probably increases the weight of the crop. The harvest is, by these means, advanced at least a fortnight. In the ordinary mode of managing a bean crop, their tops are green when reaped, and require a considerable exposure in the field to prepare them for the stack; whereas without the tops, the crop is sooner in a condition to be carried, and less risk is incurred from frost or wet. The tops are left to rot on the ground. This mode of cutting off the tops is peculiarly calculated for the drill system; as all the plants are accessible; and it furnishes an additional reason for that superior mode of culture for pulse crops.

Beans should be cut down as soon as the eye has attained a deep colour; and if the weather be dry, made up as soon

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as possible into sheaves. The straw will thus be triple the value, and the seed of superior quality. After they are cut and put into small sheaves, not exceeding from six to eight inches in diameter, they ought to be immediately conveyed to another field, otherwise the season of sowing may be lost. Beans in this way, if put in an airy situation, will be sufficiently dry to be stacked on cast-iron pillars with *bosses*, in ten, twelve, or fourteen days after they are cut. By these operations, namely, the cutting off the tops of beans, reaping them early, conveying them to another field to dry; and stacking them on cast-iron pillars with bosses, the harvesting of beans may be considerably accelerated, and more time given to prepare the soil for the succeeding crop of wheat;—advantages of no common kind.

Beans are an useful article of diet for horses which work hard, but are unfit for young horses, or such as use but moderate exercise.

From the analysis of beans it appears that they contain considerably more gluten and less starch than either barley or peas; but peas contain saccharine matter, of which it does not appear that any has been detected in the bean. From their possessing somewhat more than one-tenth of their weight of gluten, they must necessarily afford considerable nutrition, but it is well known, notwithstanding, that they do not agree with many stomachs, and that they are frequently accompanied with considerable flatulence. The healthy and robust may, however, eat them both green, and in their dry state, if well boiled, with impunity, and even advantage.

BEAN, KIDNEY or FRENCH, *Glycine*, by some botanists termed *Phaseolus*, is a plant of one species with several varieties. Those principally cultivated for the table are, the common white, or *Dutch*; the smaller kidney, called the *Buttersea bean*, and the upright sort, called the *tree kidney bean*. They are, however, more commonly distinguished into *dwarfs* and

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runners; (i. e.) the former, which requires no support but grows bushy, about a foot, or a foot and a half high, and which generally become fit for table before the latter, which are supported by long poles, or sticks thrust into the ground. The best of these are usually denominated *scarlet runners*, and is one of the most productive and agreeable vegetables of the garden, continuing to bear, if not cut off by frost, till late in October.

They are all propagated from seed, which should be sown in dry weather, about the latter end of March, or beginning of April, to produce an early crop; they require a dry soil and warm situation at this season of the year. Early crops may also be raised in hot beds, in the same manner as early cucumbers. The first crop may continue a month, and to supply the table afterwards there should be fresh sowings in March, April, May, and June. They should be planted in rows at two feet and a half distance, and each plant should be about two inches apart. Kidney beans, as they are usually dressed in the summer months, afford an agreeable and nutritious food.

BEAR, BEER, BARLEY-BIG, or *Square Barley*, is a very strong luxuriant plant, both in grain and straw; it resembles barley in growth, and cone wheat in size. It is cultivated both in Ireland and Scotland, in the best and richest soil, usually after potatoes: the time of sowing is between Michaelmas and Christmas.

The cultivation of Bear has been recommended in England, because it will grow even on stiff land, where barley will not thrive; it ripens from one to three weeks sooner than any other grain; it may be used in our malt-distilleries, not only instead of barley, but of wheat; and it may be given to swine with great advantage instead of barley-meal; and it is said, moreover, to produce more bushels per acre.

HEARD, the hair growing on the chin, and adjacent parts of the face of male adults. The customs of most nations respecting beards, have been various.

The Chinese consider a long beard incalculable; among the Turks it is more infamous for a man to have his beard cut off, than in other countries to be publicly whipped, or exposed in the pillory. Nature has given the beard, with few exceptions, exclusively to the male sex. There appears to be no justifiable reason for shaving it, but that such custom certainly contributes to cleanliness. See SHAVING.

Bearing Down of the Uterus. See PREGNANCY.

BEARS-FOOT, *Helleborus foetidus*, or Stinking Hellebore, is a perennial indigenous plant, growing under hedges and shady places, in a chalky soil, and flowering in March and April. The stem is about eighteen inches high; the leaves, which are of a deep green, stand upon long channeled footstalks, surrounding the middle of the stem; the leaflets are long, narrow, lanceolate, obscurely serrated, and generally nine in number. The flowers, which are numerous, are of a pale green colour, tipped with purple.

The odour of the recent plant is foetid; the taste of the leaves, when chewed, bitterish, biting, and so acrid as to excoriate the mouth. The stipules possess these qualities in a greater degree than the proper leaves.

The leaves of bears-foot are strongly cathartic and emetic, and in over doses are highly poisonous. They have been often, and long successfully used by country quacks, as a remedy for the long round worms with which children are frequently troubled; and from the temerity with which both a decoction and the powder of the leaves have been given, children have been occasionally sacrificed to the ignorance and mismanagement of such pretenders. There can, however, be no question that, by skilful and prudent management, bears-foot, as a worm medicine, may be given with very great advantage and success.

The leaves are given dried, in the form of powder; or a decoction, made by boiling two drachms of the recent leaves, or half a drachm of the dried

leaves, in eight fluidounces of water for fifteen minutes; or a syrup made with the expressed juice of the recent leaves moistened with vinegar, which is supposed to correct the violent effects of the drug.

The dose of the powder is from six grains to one scruple; of the decoction one fluidounce; and of the syrup a tea-spoonful at bed-time, and one or two in the morning, to children betwixt two and six years of age, on two or three successive days.

We cannot quit this article without strongly advising parents and others, to be very circumspect in giving this powerful medicine to children: and above all, never to give any worm medicine whatever, prepared by ignorant and itinerant quacks.

BEAUTY is that assemblage of graces, or proportion of parts, which pleases the eye. It is more particularly applicable to the female of the human species. But in a more extended sense, it applies more or less to almost all things in the universe, animate as well as inanimate, ideal as well as corporeal.

Personal Beauty consists of colour, form, expression, and grace. Colours please by opposition, and it is in the face that they are most diversified and exposed. The beauty of form includes symmetry of the whole body, even to the turn of the eye-brows, or graceful flow of hair. Hence an union and harmony of all parts of the body is the general cause of beauty; and while the peculiar beauty of the female form is delicacy and softness, that of the male is apparent strength, or agility, without coarseness.

Expression is the effect of the passions on the muscles of the human countenance, and the different gestures. The finest union of passions is a just mixture of modesty and sensibility; but all the benign affections add to beauty, such as love, hope, joy, and pity, whilst hatred, fear, and envy deform the features.

Grace is the noblest part of beauty. The mouth is the chief seat of grace,

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as the expressive beauty of the passions is principally in the eyes. There is no grace without motion.

Moral Beauty consists in that uniform conduct which, independently of personal interest or advantages, is influenced by no other consideration than that of conscious rectitude.

Our fair readers who are endowed with a great share of Personal Beauty will not, we hope, cease to remember that this attractive gift is of very little value, if not accompanied with both moral and mental beauty, in which, indeed, the most estimable qualities of beauty will be found to consist: nor should they forget that personal beauty is a gift of nature, but that moral and mental beauty may be acquired by attention and care, and hence its superiority to the first. Hence also may be explained the reason why some ladies are more pleasing with plain features, than others who have beautiful ones; but who, upon an acquaintance, evince a great want of the attractive beauties of the mind.

BEAVER, an amphibious quadruped, of which there are two species.

The first, *Castor Fiber*, or common Beaver, inhabits the northern parts of Europe, Asia, and America, on the woody banks of rivers, and unfrequented lakes. The beaver is as large as a middle-sized dog; its hair is short, soft, and dusky, varying by climate to darker or lighter, and sometimes spotted. The tail is about half the length of the body, flat, horizontal, and scaly. Its flesh has the flavour of fish, and is esteemed delicate food. It feeds on the bark and leaves of such trees as have not a resinous juice, but not on fishes or flesh. It walks slowly, swims dexterously, and sleeps profoundly; is very cleanly, eats sitting on its haunches, conveys the food to its mouth with the fore paws, cuts down trees with its teeth, erects convenient houses; lives in families from which the indolent are banished, who become solitary. The female has four teats: gravid four months: produces commonly two. mte-

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ly three, or sometimes four, at a litter. In the structure of its house it far exceeds the ingenuity of all known quadrupeds, preparing, in concert with others of its own species, a kind of arched cavern or domes, supported by pillars, and lined, or plastered internally with an astonishing degree of neatness and accuracy. The American beaver surpasses, however, in its powers of architecture, all the rest of the genus. The stomach of this animal is furnished, at the right side of the upper orifice, with glands, discharging into it, through eighteen orifices, a peculiar fluid; it has also near the genitals, or rather inguens, two large glands with cellular follicles, secreting the sebaceous matter called *Castor*, of which each animal will sometimes produce two ounces. See **CASTOR**. This animal may be easily tamed, and then appears of a gentle disposition.

The other species is the *Castor Andobrius*, a native of Chili. Its hair is double, like the former; the undermost finer than the rabbit's: on the back it is of an ash colour, on the belly whitish. This is a fierce animal; it feeds on fishes, crabs chiefly; and remains long under water. It does not possess the same sagacity for architecture as the *Castor fiber*. It produces from two to three young; its length is about three feet. This animal is called in Chili *guilleno*.

The skins of both these animals are valuable. The fur is used for the manufacture of hats, and also for certain cloths, which have the softness of velvet.

BED, a convenience on which the body may be laid, either for ease, rest, or sleep. It is generally made of feathers, inclosed in a ticken case.

Physicians have generally declaimed against the use of soft beds, as being enervating and injurious: we believe, however, that more mischief has been attributed to these agreeable luxuries than is warranted by facts. At any rate, soft beds are not injurious to the old and infirm, and those who would, without them, pass a sleepless night.

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They, unquestionably, are bad conductors of heat, and, of course, prevent its escape from the human body. To the young and vigorous, to those whose pulse throbs with the elasticity of health, hard beds, or even a bed of wood, may be advantageous : for health can endure many extremes.

There are two things, however, in beds against which we must decidedly protest, and these are *curtains*, and a great weight of *bed-clothes* : those who wish for sound sleep, should either have no curtains to their beds, or, if they have them, should never suffer them to be drawn. Nothing is so likely to produce all kinds of horrid dreams, the incubus, &c. as drawn curtains, and a weight of bed-clothes. In short, whilst we are asleep, as long as we are secured from an immediate strong current of cold air, we can scarcely have too much of this valuable elastic fluid.

BED-ROOM, an apartment, or chamber devoted to the enjoyment of nightly repose, after the usual labour and fatigue of the day.

A bed-chamber ought never to be on the ground floor, nor have a northern aspect : an eastern front is to be preferred ; nor should the window curtains, if it can be avoided, be drawn, nor the window shutters be closed. No bedroom should be without a fire-place in it ; nor should the practice of placing a chimney-board before the fire-place ever be permitted.

Small closets, and all concealed beds, are extremely injurious. When persons are from necessity obliged to sleep in them, it will be advisable every morning immediately after rising, to displace all the bed-clothes, and to open the doors and windows. But we do not think it, upon the whole, a safe practice to sleep with open windows, either in the day, or in the night time, unless the external air should happen to be of the same temperature as the bed-room, which is very seldom the case : and damp air should as much as possible be excluded.

BEDSTEAD, a frame for supporting

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a bed. Among the various materials used for bedsteads, iron is not only the most durable, but also the best in other respects. Oak is also excellent for this purpose ; and cedar, were it not for its strong odour, would be still more efficacious in preventing the inroads of bugs. But the woods most commonly used for bedsteads are, notwithstanding, beech and mahogany ; and that these, with only a very moderate degree of cleanliness, may be kept perfectly free from bugs, we have had ample experience. See **BUG**.

It is of primary importance that the bedstead should not be so high when the bed is on it, that the person sleeping in it will be above the level of the mantle-piece of the chimney. Care should, therefore, always be taken that the vitiated air exhaled from the body whilst sleeping, may find a ready exit by the chimney, if not by other means ; and for this purpose the bedstead, according to the usual height of mantle-pieces, ought not to be above eighteen inches from the floor : we are aware that this height will offend the fashion ; but fashion is not of so much importance as health.

The sides of the bedstead ought not to be placed near a wall ; the best place is most unquestionably, with the head against the wall, in the middle of the room, and fronting the fire-place : this is not only the most healthy situation ; but in thunder storms, should the electric fluid descend into the room, the person in the bed in that situation, is most safe. In addition to what has been said relative to curtains, under the article **Bed**, we may add, that the custom of providing the bedsteads of children, in particular, with curtains, is liable to strong objections, so that for them, at least, they ought to be discarded. We do not, however, mean to say that curtains ought to be wholly abandoned. In health the use of them is not necessary, but injurious ; and in many diseases more so. There are, however, some diseases where excluding the patient from light may be important ;

and also in a few other cases, where the laws of propriety and decorum may render them necessary : in such cases, and such only, are the use of curtains admissible.

A patent was sometime since obtained for a *Bedstead for the sick and wounded*, by Mr. Lambert, which is ably calculated to alleviate the painful situation of the aged, the infirm, and the diseased ; it affords a comfortable accommodation to persons confined by fractures, gout, palsy, &c. ; and is particularly adapted to lying-in women. The bed may be made, and the linen changed, without, in the slightest manner, disturbing the patient, which renders it highly serviceable in camps and hospitals.

BED-TIME, or that period of the evening, or night, when we go to bed to enjoy the necessary repose.

It is not easy to lay down rules for bed-time, notwithstanding it is admitted that going to rest early is the best way of obtaining not only good repose, but good health. Much, however, with respect to individuals, depends upon the arrangements and pursuits of the day.

Those persons who spend the greater part of their time in labour from an early hour in the morning, six o'clock for example, generally retire to repose at least two or three hours before midnight, which are believed to be much more refreshing than the same number of hours in the morning. But it must not be forgotten, that the custom of labouring early necessarily begets the custom of going to bed early ; and upon the whole, to rest in the dark, and rise as soon as it is light, is certainly the most natural order of repose, and such by which the health of all the functions is best promoted. It would not, however, be an easy task to convince the fashionable world of this truth ; nor we fear will any advice which we can give, abridge fashion of its folly, or dissipation of its midnight and early morning orgies.

The studious, and especially specula-

tive persons, in consequence, we suspect, principally of a deficiency of muscular exertion during the day, do not, or, perhaps, cannot comply with what are commonly called regular hours. Their pursuits, too, seem better adapted to the quiet stillness of the night, while they indulge in reflections, which require a connected series of thought and reasoning, uninterrupted by the noise of day. Yet, even such persons would do well, as much as possible, to avoid late hours.

It is by no means proper to retire to rest immediately after a full meal ; an hour, at least, after supper, which should be a light one, ought to elapse before we resign ourselves to the most benevolent of deities, if properly invoked.

Bed-time, therefore, for the labourer and mechanic, is best at nine, and if the studious and fashionable would never exceed eleven, they would ultimately find their health improved, and the elasticity of their minds would acquire a firmer tone and tension.

It is scarcely necessary to add, that in order to enjoy beneficial repose, every object which may excite unpleasant ideas in the mind should, for some time before going to bed, be most sedulously avoided ; hence the impropriety and mischief of filling the young mind, in particular, with tales of terror, or silly fables, which, sometimes, in consequence of an excited dream from such impressions, continue to haunt the mind through the future life. See **SLEEP**.

BEE, *Apis*, in natural history the generic name of a family of hymenopterous insects, of which several possess the art of collecting and storing up honey. The insects of this genus live, some of them, in large societies, and some are solitary ; their food is the nectar of flowers, honey, and ripe fruit ; the larva is soft, and without feet ; the pupa resembles the perfect insect ; the males have no sting ; the sting of the females pungent, and concealed in the abdomen. There are two

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hundred and fifty-seven species scattered over the globe.

The *Apis mellifica*, Honey or common Bee, is the only species which it is necessary for us to notice here. It inhabits various countries of Europe, in hollow trees, but is chiefly kept in hives for its produce of wax and honey. It is certainly a curious and extraordinary insect.

A hive contains three kinds of bees.

1. A single *Queen-bee*, distinguishable by the great length of her body, and the proportional shortness of her wings.
2. *Working-bees*, female non-breeders, or, as they were formerly called, neuters, to the amount of many thousands : these are the smallest sized bees in the hive, and are armed with a sting.
3. *Drones*, or males, to the number perhaps of 1500 or 2000 : these are larger than the workers, and of a darker colour ; they make a greater noise in flying, and have no sting. The whole labour of the community is performed by the workers : these elaborate the wax and construct the cells, they collect the honey and feed the brood. The drones, numerous as they are, serve no other purpose than to insure the impregnation of the few young queens which may be produced in the course of the season ; and they are regularly massacred by the workers in the beginning of the autumn ; except in hives deprived of a queen, or which have a queen whose impregnation has been retarded ; in such the drones live through the winter.

It is the office of the queen-bee to lay the eggs. These remain about three days in the cells before they are hatched ; they then appear small white worms ; these worms, or larvae, are fed with honey for some days, and then change into nymphs, or pupæ. After passing a certain period in this state, they come forth perfect winged insects. The working bees had for ages been considered as entirely destitute of sex, and hence, in the writings of many authors, are denominated neuters. But from the experiments of Schirach and Huber, it seems now to be clearly ascer-

tained, that the workers are really of the female sex ; that the organs of generation are small and imperfect, but that they are, however, capable of development, if the larvae be fed with royal jelly, a food prepared exclusively for the queen larvae.

The queen begins to lay the eggs of workers, in general, forty-six hours after her intercourse with the male, which takes place in the air, and not in the hive ; and she continues for the subsequent eleven months to lay none but these ; it is only after this period that a considerable and uninterrupted laying of the eggs of drones commences.

It is now proved, by satisfactory experiments, that when bees are by any accident deprived of their queen, they have the power of selecting one or two grubs of workers, and of converting them into queens. They accomplish this by greatly enlarging the cells of those selected larvae, by supplying them more copiously with food of a more pungent sort than that which is given to the common larvae.

When a queen is removed from a hive the bees do not immediately perceive it ; they continue their labours, watch over their young, and perform all the ordinary occupations ; but in a few hours agitation ensues ; all appears a scene of tumult in the hive ; a singular humming is heard ; the bees desert their young, and rush over the surface of the combs with a delirious impetuosity : on replacing the queen in the hive tranquillity is almost instantly restored. They know the individual person of their queen : for if another be palmed upon them they seize and surround her, so that she is either suffocated, or perishes by hunger : the workers are never known to attack a queen-bee with their stings. If, however, more than eighteen hours have elapsed from the loss of their queen, before a strange queen is introduced, she has some chance of escape, and after being treated for some time as a prisoner, she is at length permitted to reign over the

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hive. If twenty-four hours have elapsed, the stranger will be well received at first, and at once admitted to the sovereignty of the hive. In short, it appears that bees when deprived of their queen, are thrown into great agitation ; that they wait about twenty-four hours in hopes of her return ; but that, after this period, the agitation ceases, and they set about supplying the loss by beginning to construct royal cells. It is when they are in this temper, and not sooner, that a stranger queen will be graciously received ; and upon her being presented to them, the royal cells, in whatever state of forwardness they happen to be, are instantly abandoned, and the larvas destroyed. A queen in ordinary circumstances lays about 3000 eggs in two months.

It ought also to be mentioned, that when a supernumerary queen is produced in a hive, or introduced into it, in the course of experiment, either she or the rightful owner soon perishes : it appears that the sovereignty is decided by personal conflict between the rival queens, the working bees being either passive spectators of the contest, or more frequently stimulates the heroine to the battle. The same hostility towards rivals, and destructive vengeance against royal cells, animates all queens, whether they be virgins, or in a state of impregnation, or the mothers of numerous broods.

The times in which the eggs of the different kinds of bees in a hive come to maturity is as follow :

The worm of workers passes three days in the egg, five in the worm state, and then the bees close up its cell with a wax covering. The worm now begins spinning its cocoon, in which operation thirty-six hours are consumed. In three days it changes to a nymph, in which form it passes six days. On the twentieth day of its existence, counting from the moment the egg is laid, it attains the fly state. The royal worm also passes three days in the egg state, and is five a worm ; the bees then close its cell, and it immediately begins spinning the cocoon, which occupies twenty-

four hours. The tenth and eleventh days it remains in complete repose, and even sixteen hours of the twelfth. Then the transformation to a nymph takes place, in which state four days and eight hours are passed. On the sixteenth day the perfect state of queen is attained. The male worm passes three days in the egg, six and a half as a worm, and metamorphoses into a fly on the twenty-fourth day after the egg is laid.

Relative to the queens, after the transformation is complete, instead of emerging from their cells as the workers and drones do, the bees always keep them prisoners for some days in their cells, supplying them in the mean time with honey for food ; a small hole being made in the door of each cell, through which the confined queen extends her proboscis to receive it. The royal prisoners continually utter a kind of cry or song, the modulations of which are said to vary, and which notes are so conspicuous and distinct about the time of swarming, that the curious in bees inform us they can predict, within a day or two, the time at which the swarming will actually take place. When a young queen at last gets out, she meets with rather an awkward reception ; she is pulled, bitten, and chased as often as she happens to approach the other royal cells in the hive. The purpose of nature seems to be, that she should be impelled to go off with a swarm as soon as possible.

A *swarm* is always led off by a single queen, either the sovereign of the parent hive, or one recently brought into existence. The first swarm which proceeds from the hive is conducted by the old queen ; after which, the remaining bees take particular care of the royal cells, and prevent the young queens successively hatched from leaving them, unless at an interval of several days between each. The young queens conducting swarms from their native hives are still in a virgin state. The day after, being settled in their new abode, they set out in quest of the males, and this is usually the fifth day of their

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existence as queens. Old queens conducting the first swarms require no renewal of the intercourse with the male, a single interview being sufficient to fecundate all the eggs which a queen will lay for at least two years.

Having laid before our readers the natural history of this curious insect, we shall now proceed to detail the best methods of making it useful in the production of honey and wax. We are aware that a variety of publications have appeared from time to time on the history and domestic management of bees, on the best methods of taking their honey and wax without destroying these industrious insects, and on the construction of HIVES: as we are, however, not writing for speculators, but for the husbandman, the farmer, the gardener, the cottager, and the practical domestic economist, we shall pass over all those projects which have more ingenuity and expense than any other quality to recommend them.

The cruelty of taking the honey by destroying the bees has often been pathetically lamented, and we admit that if it could be taken without destroying them, other circumstances being the same, the method of doing it ought to be adopted. But we avow it as our opinion, that it is both impracticable and unnecessary. No insect generates faster than the bee; it has been ascertained that in three weeks after a swarm had been hived, not only were the combs formed but full of the maggot, the infant state of the Bee; and the combs will be found so filled with progressive generation from the month of March until October. Besides, the earth produces but a certain quantity of flowers, all of which do not afford honey for bees. Their numbers, therefore, must be limited by the food necessary for their support, and to suffer them to increase *ad infinitum*, would be to defeat our object: for famine would soon destroy those which a mistaken mercy had spared.

Those who are unacquainted with this insect suppose that it possesses the

see simple of every flower, and that the whole region of Flora is devoted to its use. It is very far otherwise. The rose, and many other flowers, it never sucks at all; nor, indeed, any whose cup is so deep that its sucker cannot reach the bottom of it. He, therefore, who wishes to keep bees must not rely upon every flower as furnishing support to his apiary; he must rely only on those which are shallow and small, or which expand widely in the leaves, so that the bee can get to the bottom of the flower; neither should he rely on the produce of the fields, but he ought to make his garden, or its borders, a place for such herbs and flowers as are fit for their use. For this purpose nothing is so grateful to the bee, so fruitful in flowers, and so easily propagated as lemon thyme; the common thyme, winter savoury, and mignonette they also greedily seek, and they blossom late and are therefore valuable. In the garden, also, as affording food for bees, we strongly recommend large plantations of gooseberries, currants, and raspberries. Few of the ornamental flowers of the garden, such as the ranunculus, anemone, pink, or carnation, afford any pabulum for bees; and as for the tulip, it is decidedly deleterious, of the single wall-flower the bee is, however, fond; and rose-mary, as an early blossoming shrub for them, should not be omitted.

The blossom of the turnip is, however, very useful, furnishing both wax and honey; the flowers of the hawthorn is also, we believe, a source from which the bee collects a great quantity of honey; the blossoms of beans, clover, and the lime-tree are also visited by this insect; and for wax the blossoms of the furze and broom, and almost every variety of heath: proximity, therefore, to the sources of support is a very desirable circumstance in the formation of an apiary; but where heath, and other mountain flowers, have been exclusively abundant, we have often found the honey of a brown colour, and not of the best que-

lity. Viper's bugloss and borage have also been mentioned as plants affording much honey for the bee.

The next object is the hives to be used, and the mode of hiving the swarms. Nothing is more injurious than using hives which are considerably larger than the swarms to be put into them. It has been observed, that bees never work well unless the hive be full. It is, therefore, necessary that a swarm should fill the hive within two or three rims at the bottom; and if one swarm be not sufficient for the purpose another should be added, or even more, till a proper proportion of bees is brought together; this may be done with the greatest ease, by spreading a cloth on the ground and striking the hive, which contains the swarm to be added, quickly and sharply on it, when the swarm will fall in a cluster on the cloth, and then quickly covering it with the hive, which is to be reinforced with the addition; those on the cloth readily ascend and fraternize without difficulty with the others: thus a strong hive is formed, and the bees will work with spirit, the hum of many round the door seeming to rouse and cheer the rest. We may, however, observe here, that this mixing of swarms is more necessary in July than the earlier part of the summer: as at the former period the swarms are commonly small; and as it rarely happens that small swarms, if hived alone in that month, produce any honey at all.

The hives in common use, in the neighbourhood of London, are made of straw: those from Chelmsford and Hertford have been mentioned as the best, the rolls of which are thick, although not very hard, and the shape well proportioned and handsome; the shape which has been preferred is low, wide, and pointed at the top. The straw of which they are made should of course be clean, sweet, and not discoloured. Other materials are, however, sometimes used: rushes and sedges; one of the last sort, obtained from a species of *agrostis*, growing on sand hills near the sea, in various parts of England, makes excellent bee-hives.

There is considerable difference of opinion concerning the best method of keeping bees, whether in single stocks covered with a suitable thatch, or in houses: but the cottager can hardly be expected to adopt the latter method, which, under proper management, may be the best: we shall treat of both.

When the hives are to stand singly, four strong oak stakes should be driven into the ground at equal distances, thus: : corresponding to the dimensions of the floors upon which the hives are to rest. The stakes should be sixteen inches above the earth, and they should be so driven into it that when the hive is put upon the floor, which is to be nailed of course to the stakes; any water which should by chance fall upon the entrance to the hive will run out, and not into it. A trifling inclination is sufficient for this purpose.

The board on which the hive is placed should be well-seasoned elm, of the thickness at least of an inch, as it will otherwise warp with the heat of the sun; and when every part of the bottom of the hive does not touch the board, vermin, such as ear-wigs, snails, &c. will sometimes get in, and from the moment such unwelcome guests intrude into a hive, the bees become discontented, and cease to work with their accustomed vigour.

The stocks should be placed three or four feet from each other, and not too many together. They should also stand in a south aspect, and be sheltered by a close-shorn hedge, or a wall behind them to the north.

If the domestic economist should prefer a *Bee-house*, we beg leave to lay before him the observations of ISAAC ESPINASSE, Esq. of Bexley, in Kent, from a paper by that gentleman, published in the 36th vol. of the *Transactions of the Society of Arts*, whence indeed, some of the preceding observations are taken. It contains the latest, best, and most practical directions for the management of the bee which we have seen.

"The *Bee-house* is the next object of care. I consider mine the best or-

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nement of my garden. There are but two aspects, in which the bee-house should be placed : the South, or some point towards it ; and the East. I have in my principal apiary, two houses, each containing eight hives ; the one fronting the East, and the other the South. I have endeavoured to ascertain in which of them the bees thrive best, but in that respect I could find no difference. I, however, prefer the Southern aspect, as it enjoys the benefit of the winter sun, whose warmth and effect, in keeping the house dry, is of infinite consequence. It is essential to the thriving of bees, that they should be kept sheltered from damps, and wet in summer and in winter ; as, unless they are kept warm, they will not work.

" The absolute necessity of warmth during the winter, to the preservation of bees, is the best answer that can be given to the taking of the honey, without the destruction of the bees. If the honey be taken, the combs must be taken too ; what is the effect ? the hive becomes empty ; there is no exclusion of cold, there is no resting place for the bees, which are sheltered between the combs, and some food is derived from the bee-bread, and wax, which is taken away. How, therefore, a swarm deprived of combs is to live in that cold, inactive, and unprotected state, I cannot conceive ! If you mean to carry your hives through the winter, you must give them their natural comfort and support ; you must leave them their combs, and their hives, and liberty to follow that mode of living which nature has pointed out to them.

" Every bee-house should be constructed of sufficient depth, that the hives may be brought forward, or pushed back as the weather serves. In summer they cannot be brought too far into the light and heat ; nor in the winter, be too far removed from the external wet and cold.

" My two bee-houses are sheltered on every side by hedges, except towards the South and East. The hedges to the North and North-east are beech,

which are kept closely clipped. No trees should be planted in the front. Six hives are enough for each house, and the houses should stand at some distance from each other ; the reason is, that when the bees swarm, the buzz of those which rise first, is apt to induce the other hives to swarm also, and two good swarms often unite ; but when they do so, they should be put into a hive proportionably large. The bee-house opens by folding doors at the back, by whichever hive can be easily got at, for any purpose required ; the places in front, being made too narrow for a hive to be taken out there. The floors should be made accurately level, for the purpose of feeding the bees if necessary.

" Previously to shutting up the bee-houses for the winter, the hives should be all taken out, and the whole interior carefully swept.

" I have found few birds destructive to the apiary : the most destructive is the bird called the house lark, a small ash-coloured bird, of the size of the tit-lark ; and next to it the tom-tit ; these should therefore be destroyed, whenever they present themselves where bees are kept.

" Of the insect tribe, there are many inimical to bees ; of these the moth is the most deadly ; these insects are among the smallest of the genus, and are of a light whitish brown ; they are remarkably active in their motions, and are seen running round the hives, watching their opportunity to enter, which when permitted to do in any number, the combs become the depository of their eggs ; the top is filled with silky film ; the bees are expelled, and the combs, when torn, resemble paper : these should be carefully watched, and destroyed whenever they appear, for when they enter a hive and breed, the loss of it is inevitable. Spiders also, although but in a small degree destructive, interfere much with, and obstruct the working of the bees without, by drawing their webs across the recesses of the apiary ; this is, however, in summer and autumn only.

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They are very easily destroyed, by going out at night with a candle, at which time only they are visible on their webs. But of the numerous enemies which bees have to encounter, the most daring, as well as the most destructive, is the wasp. He enters the hive without fear, and plunders it without mercy; to them, many hives fall sacrifices in every season. I have found the only efficient remedy is to destroy their nests in the neighbourhood of the apiary.

"I have uniformly closed the entrance of my hives, by means of two small pieces of wood, about an inch and a half long, about the sixth part of an inch broad, and of the same thickness; there is a groove in each, to receive a sliding piece of board, about one inch and a quarter wide, in which are cut two small doors, wide enough to admit one bee at a time only. The pieces of wood are fixed on each side of the door, cut in the hive itself, and fastened to the hive by two large pins, the sliding piece of board is then fixed in two grooves, and is raised or put down at pleasure.

"This invention has answered admirably, not only for the purposes of enabling the bees to defend themselves from the wasps, but to shut them up during the Autumn and Winter: during the Autumn, to keep out the vermin, and in Winter to keep them warm, yet give them air.

"There are four periods at which bees are to be particularly attended to. The first I consider to commence from the earliest bloom of the willow, and blossom of the gooseberry. If at this season they appear brisk, and issue from their hives in numbers, let no feeding on any account be allowed, but if a hive is observed, when struck, to emit a dull and heavy buzz, and if the bees do not issue in any numbers, it may be of service to feed them, but scantily, and merely to give them strength to go abroad. From this time until the period of swarming, they require some little attention; if the season be open, dry, and mild, in fact,

none; but if May should be wet and cold, after the first swarms are cast, so that they cannot work, they must be attended to and fed, or they will perish.

"During the Summer, the only attention requisite, is to watch the hives which show any indication of swarming, to take care that none go off.

"When, from the failure of the flowers, little or no addition is made to the stock of the hive in wax or honey, and I calculate upon none after the middle of August, I consider this to be the proper period to take those hives which are too weak to get through the winter: for if not then done, a slow and lingering death by famine awaits them. I therefore begin to take my hives in the middle of August, at which time the honey runs more readily from the combs; the refuse, when thrown out, affords food for the bees which remain, and there are fewer competitors for whatever pabulum the Autumn flowers afford.

"The honey when taken, in order to be pure, fragrant, and well flavoured, must be such as flows spontaneously from the comb, cut into a hair sieve transversely, when the hive is taken; left to flow through the sieve into a vessel beneath, and never squeezed, nor the running of it forced by heat; and after it has flowed through the hair sieve, it should be again strained through a finer one, so that not a particle of wax should mix with it, which creates a fermentation, and spoils the honey.

"If, however, the combs be kept in the hive, and only taken out when wanted, the honey will preserve its clearness, purity, and sweetness, for at least a year.

"When an old hive has the unconsumed honey of former years, in any quantity, in addition to what the present year has given, and the number of bees is small, that hive is often marked out as a prey to its neighbours. Finding it therefore absolutely impossible to save it from pillage, I uniformly take it, and save other hives, which I might

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he disposed to take, from a mere trial of their weight, but in which the number of bees is considerably larger.

“ Whatever hives are selected to be kept for *stock hives*, should be closely plastered with lime to the stool. The front of the bee-house should be covered with board, or oil cloth, and the hives pushed back, whereby they become darkened, and the bees less disposed to go abroad in winter. If the number of the hives be so great, that any given number may be selected, that selection depends on the weight of the hive, and the heaviest should be kept for stock, taking care, however, not to be decided by it only, but also by its strength in numbers: this can be known, by having observed them out at work in Autumn, or by throwing the loose combs, from which the honey has flowed, before the bee-house, whence they will issue in great numbers to suck the refuse honey; they may be watched on their return to the hives, and their numbers calculated. This attention to the number of bees, as well as to the weight of the hives, is indispensably necessary, and on which every thing depends. I always weigh my hives with the board on which they stand, having before ascertained pretty nearly the weight of the stand, at the close of autumn, accurately by the scale and weights. If the hive weigh twenty-five pounds, it will safely get through the winter without feeding. Some have gone through it which weighed twenty-two, or twenty-three pounds only; but upon them without feeding, I cannot absolutely decide on their abilities to pass the winter, and the early part of the spring. But with the aid of feeding, it is perfectly easy to bring any hive through the winter.

“ It frequently happens that in a late and wet season, the swarms come out in the latter part of June, and also numerous, strong and large casts of the same description; they have not time to complete their store of combs and honey, but are valuable for their numbers, and their future promise. Nothing

is more easy than to bring those hives through the winter by feeding.

“ A decided advocate for feeding bees during the winter, and having ascertained its utility and advantage, I have year after year adopted it, beginning the feeding earlier or later, according to the weight or strength of the hives, when they are put up in October. Having ascertained their relative weights, I calculate how long their stock of honey will last them, and their feeding is commenced accordingly. My whole stock is numbered 1, 2, 3, 4, &c., and on coming to town; I leave with my servant instructions, thus: No. 1, to be fed at Christmas; No. 2, the middle of January; No. 3, the latter end of February; No. 4, need not be fed, as I consider it strong enough to get through the winter without assistance.

“ The composition which I give to my bees, is moist sugar and sweet beer, boiled to the consistence of treacle; it is inserted into the hive in a small long trough, or scoop, made of wood, and hollow. This is filled daily, to insert it into the hive through the front door, would bring the bees of all the adjoining hives to share it, and to engage them in fight and destruction: my bee-house opening wholly at the back, I cut a hole, large enough to admit the trough at the back part of the hive, and when the trough is inverted, I shut the outside doors quickly; thus no bees of the adjoining hives are roused; and the hive fed, enjoys the whole of what is given to it: the only attention required, is to take care that the board or stool of the hive is perfectly level, lest the food should be spilt, which it would be, if the board were higher either in the front, or back part of the hive.

“ It is a received opinion among the common people, that no hive should be suffered to stand longer than three years: for that it will certainly die in the fourth, or be good for nothing. No opinion can be more erroneous. I last year took a hive which had stood fourteen years, which I kept for the sake of the experiment, and which gave me a

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swarm the last season : but having cast a swarm last year, I found the number of bees so reduced, and the hive so light, that it was impossible it could get through the winter, and I therefore unwillingly took it."

Mr. ESPINASSE concludes his valuable paper, by stating that his stock of bees in the year 1816, consisted of 52 hives, 24 of which he carried through the winter without the loss of one, having taken the rest. From the 24 hives, he had upwards of 40 swarms and casts, which were hived in 32 hives.

In purchasing stock bees, the best time is just before the taking up season, which is generally the latter end of August: Mr. Espinasse prefers the middle; for then the bee-keepers reserve as many of the best stocks as they judge expedient for their next summer's supply, and therefore, after that period, are not disposed to part with any, unless at an advanced price. They should be selected in a cool evening, or rather morning, very early. By tapping about the hive, a tolerable opinion may be formed, whether it be full of bees and combs. But, for certainty, the hives may be turned upon the edge, or raised from the stand, and inspected. If the combs are white, or of a light yellow, it denotes their being of the present year's produce, and fit for the purpose; but if they are of a very deep yellow, or brown, they are of the last season, and not so proper; while those which are dingy, or blackish, are old, and unfit to furnish a prosperous apiary. The hive should be lifted by the hands; and if it be about half a bushel in size, and weigh twenty-five pounds, or upwards, this is another test of its being a good stock.

The removing of stocks should take place in the evening, or very early in the morning. The hive should be raised by three or four wedges some hours before, provided the floor be not moveable, or otherwise many bees will remain on the floor at the time, and be very troublesome. A cloth must be laid on the ground, behind the hive to be removed; nimbly lift the hive

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thereon, and gathering the four corners, tie them fast to the top; immediately draw a string close round the body of the hive, to prevent any bees from crawling out. They must be conveyed in a gentle manner.

If bees are designed to be destroyed for the honey, a hole is to be dug in the earth near the hive, somewhat wider in diameter than the hive itself; in the middle of the hole, a stick must be placed, to which is attached a large rag dipped in melted brimstone. As soon as the hive is brought over the hole, the rag is to be kindled with a lighted candle, and the hive gently placed over it, resting on the sides of the hole, so that the rag and stick shall not touch the combs. The earth is immediately to be thrown around the edge of the hive, to prevent the sulphureous vapours from escaping: a few minutes are, in general, sufficient to destroy all the bees. See HONEY, and the following articles: BEE-BREAD, BEE-GLUE, BEE-STING, and BEES'-WAX.

BEE-BREAD, a species of crude wax, collected by the working bee from the farina of flower cups, conveyed to the hive by the bee, in the hollows of its hind legs, and deposited in the cells with the egg, to serve as food for the young maggot.

BEE-GLUE, called by the ancients *propolis*, is a soft, unctuous, glutinous matter, of a reddish colour, and very agreeable smell, employed by the bees to cement the combs to the hives, and close up the cells.

BEE-STING, the puncture made in the skin by the sting of a bee. The stings of bees are more virulent than even those of wasps, and are sometimes attended with violent effects. As the sting is barbed, it is generally left in the wound. When a person is stung by a bee, the sting should be instantly extracted. The wound should be sucked, and afterwards washed with cold water, or still better with salt and water; then apply a liniment, consisting of two parts of olive oil, and one part of volatile alkali, (i.e.) spirits of harts-

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horn, liquor of ammonia, or sal volatile, (aromatic spirit of ammonia,) which ever may happen to be at hand. At the same time, five, or even ten drops of either of the last mentioned ammonia-cal preparations, may be given internally in a little orange-flower water, or other agreeable fluid. Even if the sting has not been extracted, the liniment should be used.

An application of Goulard water, or a cold saturnine poultice, has been sometimes effectual. A solution of indigo in water, is a simple, but said to be an expeditious remedy. Honey and oil, have also been used with advantage.

Powdered chalk mixed with water to the consistence of a paste, and rubbed for a few minutes on the part stung, has not only been found effectual for the cure of the stings of bees, but also those of wasps and gnats.

BEE'S-WAX, a solid concrete, generally of a yellow colour, obtained from the honey-combs of bees. Bees, as the experiments of Huber have proved, produce the wax of which the delicate partitions of the cells of their combs are constructed, from honey, sugar, and the sweet secreted juice found in the nectaries of plants; but they do not collect it ready formed from the anthers of flowers, as has been generally supposed. It is, nevertheless, also produced as a secretion by many plants, forming the silvery powder, or bloom, which often covers their leaves and fruit; and is found in great abundance combined with resin, covering the trunk of the wax-palm, *Ceroxylon* of South America; and also very pure, encrusting the seeds of the *Myrica cerifera*, or wax-tree of Louisiana, and other parts of North America. Hence, wax in the extended meaning of the term, may be regarded both as an animal, and a vegetable product. But it is the former species only of it, or bees'-wax, which demands our present consideration.

Bees'-wax is used in the arts, as well as in medicine, both in the state in which it is procured originally from the

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honey-combs, and then it is called *yellow wax*, and also when deprived of its colour, and purified or bleached; it is then called *white wax*.

YELLOW WAX is prepared immediately from the honey-comb. The honey is obtained in general by dripping and pressing the comb, which is then soaked for some days in clear water, to extract the remaining honey, and afterwards melted in a clean vessel, with boiling water, and pressed through cloth bags. It is then re-melted, and cast into round cakes, in which form it is brought to market.

Good and fresh yellow wax has a slight odour of honey, is insipid, and of a yellow colour, more or less deep. It is brittle, yet soft; somewhat unctuous to the touch, but without adhering to the fingers, or to the teeth when it is chewed; acquires tenacity when heated; melts at 142°, and burns entirely away. It may be known to be genuine by scratching the finger nail over the surface; when, if good, the nail passes over it with a kind of jerk, but if no obstruction be felt, it is, in all probability, adulterated with tallow.

Yellow wax is applied to various purposes; great quantities are annually bleached, and converted into candles. (see the next article.) It is now scarcely ever used internally as a medicine, but is chiefly employed in the composition of external applications; hence, it is an ingredient in the basilicon, the wax plaster, calamine cerate, &c.

WHITE WAX. When yellow wax is exposed with an extended surface to the action of light and air, and sprinkled with water, the yellow colour and peculiar odour are lost, and it becomes white. This process is thus performed: The yellow wax is melted with a very little water in a copper vessel, and then run off through a plug-hole in the bottom, into another vessel, which is covered with a cloth to retain the heat, until the water and the impurities settle. The clarified melted wax is next suffered to flow into a vessel, the bottom of which is full of small holes, through which it runs in small streams upon a cylinder,

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kept constantly resolving over, and partly dipping in cold water, into which the wax falls, drawn out into thin shreds, or ribbands, and is instantly cooled. These are spread upon cloths, stretched on frames, exposed to the light and air, and occasionally watered and turned; so that after some days, the colour nearly disappears. After being thus half bleached, the wax remains heaped up in a solid mass for a month, when the whole process is again repeated. It is, lastly, generally melted and cast into thin discs, about five inches in diameter, in which form it is found in the shops.

White wax is sometimes adulterated with white oxide of lead; but more commonly with tallow; indeed, we fear very little white wax is to be found in the shops, without the latter article. The former is detected by melting the wax in water, when the oxide will fall to the bottom of the vessel, and the latter may be known, principally by its feel, and greater softness than genuine wax. *See above.*

Pure white wax is perfectly insipid, inodorous, and somewhat translucent. It is harder to the touch, heavier, and less fusible than yellow wax; its melting point being 155°.

White wax is regarded as a demulcent, and is sometimes given in obstinate cases of diarrhoea, and dysentery, with the view of sheathing the bowels, but mucilages, and gelatinous solutions are better for this purpose. The best method of giving it in these cases, is, however, to melt it with twice its weight of olive-oil, and then mix the oily compound with the mucilaginous fluid, by rubbing it with the yolk of an egg. The dose is a cupful of such emulsion, containing one scruple of wax, given every four hours.—White wax is also an ingredient in many ointments and cerates.

BEECH-TREE, a species of the genus *Fagus*, common to our own woods, as well as to Europe.

It is of pre-eminent value, whether regarded as an ornament in our forests and pleasure grounds, or as useful tim-

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ber after it is felled. It is the stateliest, and most magnificent tree produced in this country; exhibiting a rotundity and elegance, which may almost vie with the rude majesty of the oak; its branches are regular, its foliage soft, and its bark smooth and silvery. The chief objection to its use in architecture, is, that it is peculiarly subject to the worm; but the cabinet-maker and turner, employ it more than any other timber; and it is to them, what the oak is to the ship-builder, or the ash to the wheelwright. Its natural soil and situation, is a dry height, in which it will grow to a prodigious size, and extent of ramification. The seeds yield a good lamp-oil, and are eagerly eaten by squirrels, mice, and swine; the oil is used by the poor people in Silesia, instead of butter.

In Herefordshire, and Monmouthshire, beech-wood is converted into charcoal, and in several counties, its leaves are used for beds, instead of feathers.

The Beech may be propagated by seeds, or from suckers, but the first way is the most eligible. The season for sowing the seeds is any time from October to February. When the plants come up, they must be constantly kept clean from weeds; and if thick together, the strongest of them must be drawn out in the Autumn following, that those left may have room to grow. When this tree is propagated from suckers, it should be planted at once where it is designed to stand.

BEECH-NUT, or *Beech Mast*, is the seed of the beech-tree, and is recommended for fattening hogs.

These animals may be secured from the *gargut*, by moistening some leaves of beans with water, sprinkling them with powdered antimony, and repeating the medicine every other day for a fortnight. The same precaution should be used, when hogs are fed upon acorns.

When, however, a hog is intended to be killed for pickling, it should be previously taken from this food for a

month or five weeks, and fed with poltard, barley-meal, or peas.

When these nuts are eaten by the human species, they occasion giddiness, and head-ache: but after being well ground and dried, they have made wholesome bread; they have also occasionally been roasted, and used as a substitute for coffee.

BEECH-NUT OIL, is expressed from the mast, after it has been shelled and pounded. It is used in many parts of France and Silesia, instead of butter. In the obtaining of this oil, care must be taken that the seeds are clean and good, and free from all musty, rotten, or tainted nuts. The shell of the nut must be taken off, and also the film which surrounds the kernel, because they both communicate an unpleasant taste to the oil.

It has been asserted, that the mast, after the oil is pressed from it, is more nutritive than in its natural state; it may be given as a wholesome food to poultry, swine, and oxen; and from it may also be obtained a considerable quantity of starch.

BEEF, the flesh of black cattle prepared for food.

The following is the best method of preserving this valuable article of food, by salting.

Take four pounds of common salt, one pound and a half of refined sugar, two ounces of salt-petre, and two gallons of water. Boil the whole over a gentle fire, and carefully skim off the impurities. After this brine has become cold, pour it over the meat, so that every part of it may be completely covered. The beef will keep in this preparation for many months, and the pickle will not render it hard, as is usually the case in other modes of salting. It will be necessary, however, to express the blood from the meat, and to rub it well with fine salt, before it is immersed in the liquor. The same kind of liquor will also answer well for pork, and hams.

Although this liquor is more expensive than common brine, yet after boiling it, and adding more water, and the

ients, it may be used again for the same purpose.

Beef considered as food, is one of the most stimulant and nutritive kinds known: hence plethoric persons, as well as youth who are in high health, should eat little, or none of this kind of food.

It is most serviceable to those persons whose digestion is weak, and whose appetite is impaired. *Roast beef* is, however, to be preferred to boiled; but the fat of both roast and boiled, and of roast beef especially, should be religiously avoided by all valetudinarians. (*See the next article.*)

Salt beef is always a poor succedaneum for fresh, considered as an article of nourishment, and therefore should never be eaten, if possible, by those for whom fresh beef is best adapted. To the healthy and robust, and those who take much exercise in the open air, salt beef, and its fat in every shape, are generally well adapted, and even to be preferred to more stimulating food.

BEEF-TEA, a preparation from beef, which should be made by cutting one pound of the lean part of fresh beef, (the buttock, or neck, is generally preferred, but the joint is not very material,) into small pieces, and boiling it in two quarts of water, till it is reduced to about one quart; the scum, which arises during the boiling, should be taken off. In some cases, after the liquor is cold, it is decanted from the sediment, but unless there should be a repugnance in the patient to take the whole liquor without decanting, it is more powerful without any separation. This preparation has been usually called beef-tea, and in compliance with custom we so term it, but it ought rather to be called a *Decoction of Beef*, which in truth it is.

Beef-tea in the hands of medical men, experienced nurses, and well informed individuals, is one of the best medicines, (and we must dignify it with this term,) which can possibly be given in every disease accompanied with debility, where the functions of the stomach are deranged, and where it cannot bear

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solid food. Such are the powers of this preparation, that we have known it to be retained on the stomach, when no other food, and scarcely any medicine would stay. It is, indeed, a cheap and simple medicine, but, nevertheless, it is one whose importance, and utility, we cannot too much press upon the attention of our readers. We shall have frequent occasion to recommend it in the course of our work. The dose of beef tea must of course depend upon circumstances; a tea-cup full, or four ounces, is the most common, and to be repeated, according to circumstances, every hour, or every two hours.

BEER, a fermented liquor, more or less spirituous, prepared principally from barley, after it is converted into malt, with the addition of hops. It is difficult to give a precise definition of the term beer; in a general sense, it implies every kind of malt liquor, both strong and weak: *Strong Beer*, and *small beer*, are, however, two specific terms, perfectly intelligible, and most in use. As the method of making beer must be necessarily detailed under **BREWING**, we refer to that article.

Beer Measure. See **ALE MEASURE**.

BEESTINGS, or *Breastings*, the first milk drawn from a cow after calving. This liquor is of a thick consistence, and of a yellowish colour. Nature has no doubt designed it for the purpose of cleansing the bowels of the young animal, after it is calved; the calf should therefore be suffered to partake of it; indeed, it does not appear to be proper for any other purpose.

BEET, *Beta*, a plant of which there are four species. The *Vulgaris*, is a native of the South of Europe; the *Patula* of Madeira; the *Cicla* of Portugal; and the *Maritima* of the sea-coasts of our own country.

The first species, the *Beta Vulgaris*, or *Common Beet*, has several varieties: the principal, are the common red beet, the turnip-rooted beet, and the green-leaved red beet. It was from this species of the beet that M. Achard, in

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Prussia, many years ago obtained sugar; and from the same plant also many persons in France, particularly M. Chaptal, have since obtained large quantities of that important article: indeed, from the statements of the latter gentleman, we should be led to believe, that *beet sugar*, is a very profitable article of trade: but our own countrymen do not evince any disposition to adopt the manufacture.

The *Beta maritima*, which is the species for garden use, should have its seeds sown in March, on a deep light soil. The young plants, when possessed of four leaves, should be hoed out to the distance of at least four inches, and carefully cleared of weeds; the hoeing should be repeated a second, and even a third time, at the distance of three or four weeks from each other; and the plants at last thinned, so as to be separated by the space of a foot, or more. The seeds of those which are left for this purpose, will ripen in September, when the stalks should be cut off, dried, and threshed out; and the seeds cleaned, and put up for use. See **MANGEL WURZEL**.

BEETLE, *Scarabæus*, in zoology, a genus of insects, of which there are five hundred and fifty species scattered over the globe, thirty-three of which are common to our own country.

The larvae, or grubs of the greater part of this genus, live under ground; residing most frequently in earth, while in a state of fermentation, by a large quantity of manure. Pure dung is, however, the favourite food of many; and it is in its immediate vicinity that they chiefly delight to dwell. The cockchafer, the most common of all the beetle tribe, is produced from the eggs of the female, deposited under ground, where it remains during its larva state, devouring the roots of plants. In this destructive occupation, the garden beetle, and the hairy scarabæi, are employed till the period of their emancipation arrives, when they take wing, and forsaking the roots, attack the leaves of plants. The larvae of beetles have six feet, an annulate, hairy vesicu-

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lar at the end of the abdomen, and are furnished with a horny head. Though most of them delight in, and feed on dung, a few support themselves otherwise, some on decayed wood: the melonlonthæ on the roots of plants.

The *Scarabæus Melolontha*, TREE BEETLE, COCKCHAFER, or MAYBUG; called in some districts of England by the erroneous name of Caterpillar, is of a brown mahogany colour on the wings, which cover the back; the belly is covered with alternate black and white circular streaks; it is the species most deserving our notice, being the most mischievous of all European insects. The grub is soft and grey, with testaceous head and legs; it is about one inch in length, and may be seen in most gardens, on turning up the earth with a spade: it remains in the earth three years before it is transformed into the perfect insect; it devours the roots of corn and other vegetables, sometimes laying waste a large tract of country: in its beetle form it sticks to trees, upon the leaves of which it feeds, and is eagerly sought after and devoured by swine, bats, rooks, and poultry.

As rooks are so very fond of these animals in the grub state, farmers and others must perceive the folly of destroying these useful birds. The most effectual way of destroying cockchafers is to bent them off with long poles, and then to collect and burn them; or to give them to poultry, which they will soon fatten. Smoke is offensive to them; heath-fern, or other weeds set on fire, will prevent their incursions in gardens.

The common black beetle may be extirpated by placing a hedge-hog in the garden during the summer nights.

BEGGAR, one who asks alms; but more usually means one who has no fixed place of residence, but wanders about the country, and obtains his livelihood by begging.

Various opinions exist relative to the propriety of relieving beggars in the public street. If it could be positively ascertained that every public beggar was a person who had the op-

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portunity of supporting himself by honest labour, and was able and in health, but refused so to do, perhaps there might be wisdom in refusing relief to all street beggars; but as such certainty can never be acquired, we think those persons highly culpable, who adopt the stern, unfeeling, and frigid resolution of never bestowing alms on a street beggar. The legislature has, it is true, provided laws which, if enforced, would, or should prevent street begging; but, alas! how often, either from the neglect, unfeeling disposition, or cupidity of parish officers, are the humane intentions of the legislature set at nought! We know besides, that, in many instances, the legislative provision is ineffectual; and it may, and often does happen to be dispensed at too late a period, for the relief of that misery which the voice of humanity, and the decrees of benevolence and justice, tell us should be both prompt and efficient.

We do not, therefore, presume to pronounce judgment generally on beggars: but we fear that *street begging* is an allurements to those whose moral principles are weak or corrupted: and certain it is, that public beggars, as well as the enormous sums raised annually for the relief of the poor, amounting at the present time (1819) to about eight millions sterling, are not only a national grievance, but a national disgrace.

BEHAVIOUR. See BREEDING, GOOD.

BELLES LETTRES, a term borrowed from the French, equivalent to the term *Polite Literature*. It has an extensive signification; and it is not, perhaps, easy to define those parts of Literature to which it immediately applies: but a knowledge of Languages, the Arts of Speech, Eloquence, Poetry, Philology, Literary Composition, Music, Sculpture, Painting, Engraving, Ornamental Gardening, and other Arts, as well as Sciences, which contribute rather to the mental than the physical well being of the individual, assuredly belong to it. In a word, the

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Belles Lettres, comprehend, generally, what has been termed luxurious knowledge, by which the mind is polished and refined, and in which those delicacies of wit, invention, and imagination have a principal share. The contents of this work, do not come within the range of the *Belles Lettres*, except relative to the style in which it is written; the present article, and a few others, principally concerning the human mind, moral conduct, and flowers also excepted.

BELL-FLOWER, *Campanula*, a genus of plants comprehending eighty-five species, scattered over the four quarters of the globe, eight or ten of which are common to the woods, or pastures of our own country. Of this numerous tribe, the smaller portion have leaves, very nearly smooth, and glabrous, the larger portion rough, and rugged leaves. Those chiefly worth noticing as *flowers*, are the following: the *pyramidalis*, Pyramidal bell flower;—the *decurrens*, Peach-leaved bell-flower;—the *medium*, Canterbury bell-flower;—the *trachelium*, Trachelium bell-flower;—the *latifolia*, Greatest bell-flower;—the *ranunculus*, Rampion;—the *patula*, Meadow bell-flower;—the *nitida*, Smaller American bell-flower;—the *hybrida*, Venus looking-glass;—the *canariensis*, Canary bell-flower.

The pyramidal bell-flower, is propagated by sowing the seeds in March, in a bed of light undunged soil; or by parting the roots: the latter method being the most expeditious, is most practised. Almost every slip taken from the roots in September, and in March, will thrive, but the plants raised from seeds, produce the finest flowers; they are, however, very tedious this way, being three or four years before they blossom. After their sowing, they should be transplanted the September after, into the nursery, in a light soil, and not wet, at six inches square distant. In frosty weather, the beds should be covered with mats, which will greatly strengthen the roots. In the September of the third year, they

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should be removed into pots, and sheltered during the severe weather in glass frames; or else, in wet weather, the pots must be turned side ways; and in very cold, they must be set under a warm wall, or covered with haulm, and surrounded with a little dung on the outsides of the pots. These plants will often succeed without care, but with it, they produce flowers of such beauty as amply to reward it.

The Peach-leaved bell-flower, is perennial, and a native of the northern parts of Europe. It may be easily propagated, by parting the roots in Autumn. It is a very hardy plant, and will thrive in any soil or situation.

The Canterbury bell-flower, grows wild in the forests of Germany and Italy; it is a biennial plant, which dies soon after its seeds are ripe. There are several varieties of it, which are propagated by seeds sown in the spring, in common earth. They require little care or culture.

The Trachelium bell-flower, is a native of many parts of Europe; its root is perennial; it has some varieties with double flowers, which are propagated by parting the roots in Autumn; to prevent them from degenerating into single ones, the roots should be transplanted, and parted every Autumn: the soil must not be too light, or rich, for, in either case, they will degenerate. Strong fresh loam is the best.

The Greatest bell-flower grows wild in many parts of England; it has a perennial root, and may be propagated from seeds.

The Rampion grows naturally in several parts of England; it has roundish fleshy roots, which are eatable. It is propagated by seeds.

The Meadow bell-flower, is a beautiful little flower with lilac blossoms, which abounds in many heaths, and dry and rocky districts of England. It has a perennial root; and may be propagated either by seeds or by parting the roots, and will thrive in almost any soil or situation, except the clayey, and wet.

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There are some other species to be met with in gardens, which are annual plants, and are propagated by seeds; these may be sown either in spring or autumn. A delicate *white* campanula of this kind, of humble growth, is very much cultivated by some persons, both in pots and borders.

The small American bell-flower, with stiff leaves and a blue spreading blossom, does not produce seeds in this country; but is propagated by offsets taken from the old plants in August, and planted in pots of light loamy earth.

The Canary bell-flower is a perennial plant; it is propagated by parting the roots and transplanting them into pots in July, which should not be broken or wounded; but they must not be often parted, as, in that case, they will not produce good flowers. About the middle of August the pots should be put under a hot-bed frame, and, as the nights grow colder, be covered with glass; but they should have plenty of air in the day-time. In the winter season they must be frequently watered, and guarded from frost; in the spring, when the stalks begin to decay, the pots should be set abroad in the shade, and not watered.

BELLOWS, an instrument for blowing the fire; too well known to need description. Our good housewives make a great mistake when they suppose that bellows are indispensable in the kitchen. All that is absolutely necessary to kindle a fire, is a lighted candle and wood or coal, or both, and atmospheric air. If indeed a *sudden* fire be wanted, the bellows may undoubtedly hasten its burning; but where economy is important, and with whom is it not? a pair of bellows may, in general, very well be dispensed with.

Animal life may possibly, on some occasions, be supported by blowing into the lungs with a pair of bellows; especially in accidents of drowning or suffocation.

BELLY, that part of the human body which extends from the breast to the thighs, containing the stomach,

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liver, bowels, bladder, &c. See **ANATOMY**.

BELLY-ACH, pains in the bowels. These arise from various causes, and in their cure require considerable discrimination. The most common cause of the belly-ach is, beyond question, food or other substance, taken by the mouth; when therefore, any person is attacked with those pains it will be important to recollect what food or other substance have been taken during the previous day, or at least during twelve hours previous to the attack. If that food has been of the flatulent and indigestible kind, a gentle laxative of castor-oil, or magnesia and rhubarb, will most commonly remove the complaint. If poisons have been taken, such as *acids, arsenic, corrosive sublimate, poisonous vegetables, &c.* and no medical person be at hand to be consulted, the mode of treatment must be such as is directed under their respective articles, which see. If a fixed pain be felt in any part of the bowels, particularly about the navel, accompanied with sickness, vomiting, costiveness, thirst, a quick pulse, and other symptoms of inflammation, no time is to be lost in applying for the best medical aid; in the mean time, however, cloths dipped in hot water may be applied to the region of the affected part, and the patient may drink thin barley-water, toast and water, or other weak liquids, but the quantity of these should be small; and all solid, and particularly animal food, should be avoided. See **BOWELS** and **COLIC**.

The symptoms of the belly-ach in *infants* are sudden cries, contraction of the thighs towards the belly, striking of the feet, with writhing of the body and distortion of the countenance, hastily seizing and quitting the breast, acid eructations, &c. If the child be costive, it will be necessary to open the bowels with very small doses of rhubarb and magnesia, or, *if these should not be sufficiently powerful*, a decoction of senna, given every half hour till they produce the desired effect. When green fæces are voided, and the bowels are even lax, magnesia and rhubarb, or

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magnesia alone, in doses suitable to the age and strength of the child, may be given with advantage; a clyster may also sometimes be given with good effect—it may be composed of four ounces of a decoction of camomile flowers, with a spoonful or two of sweet oil and a few grains of common salt; or of milk and oil and sugar; the warm bath, or at least bathing the feet in warm water, will also be sometimes found eminently beneficial, particularly where there is any disposition to convulsions. See CONVULSIONS and TEETHING.

Benefit of Clergy. See CLERGY.

BENEFIT SOCIETY. A number of individuals assembled together, who by payments made at stated times, create a fund, out of which they receive certain specific sums, on certain specific occasions, such as illness, disability, old age, death, &c.

Such societies are very numerous in England, and have, no doubt, afforded to the lower classes of the community, amongst whom they are principally established, considerably more comfort to their members in sickness, disability, and old age, than they could have possibly obtained either from parochial or eleemosynary assistance.

There is much similarity in the constitution of these societies. The payments are in general monthly; and about two shillings the most common amount; though some associations are formed whose incomes are fixed pretty high, and then the payments are somewhat larger. The mode of regulating the benefit is commonly by three different rates of allowance; one during a temporary sickness, another commonly one half the former, during a chronic illness; and a third still less than the preceding, a permanent annuity for old age. When a member falls sick, so as to be unable to labour, he receives the allowance for sickness; if the disease continue beyond a specified number of weeks, he is reduced to the chronic allowance; if the chronic illness continue beyond a certain number of months, the member is put upon the superannuation list, and receives the

allowance for old age. Besides these rates there is almost always a sum of several pounds which is paid for the funeral expences of a member or his wife. To this feature, however, in the plans of benefit societies we most strongly object, because the greater part of such expences is absolute waste, as far as regards the society or its members, none of whom, either dead or living, is the better for it—and taken too, perhaps, from a suffering family at a moment when most commonly their resources are diminished, or rather destroyed. The sooner, therefore, the poor members of benefit societies can be weaned from the superstition of having what they call a decent, or rather we would say, an *expensive* funeral, the better. And this they might no doubt soon be by the example of their superiors. If those among them who are above vulgar error, would enjoin their successors to lay them in the earth at the smallest expense which the physical operation would admit, the childish passion for a costly funeral would soon disappear.

The mode of doing the business of these societies is exceedingly simple. When the society is not numerous, there is in general, a monthly meeting of all the members. When it is numerous, a committee is formed, of which the meetings are monthly, and general meetings at more distant periods are held of the whole. Two or more stewards, as the business may require, are chosen at certain short intervals, whose business it is to visit the members applying for relief, and to pay their allowance. Members are admitted only within a specified age, most commonly between twenty and forty-five; and the persons belonging to occupations regarded as unwholesome or dangerous are excluded by name, from most of the clubs not expressly established by themselves. There are some curious exclusions in most of the societies in the metropolis. From a great proportion of them, Irishmen are excluded; and in almost all of them it is particularly declared, that no attorney, or attorney's clerk, shall be admitted.

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member. Although a spirit of liberality would willingly forego exclusions of any kind, yet we are compelled to declare, that whilst society is constituted as it at present is, we think the last exceptions are founded in wisdom.

In almost all the London societies it is a rule that sickness or disability produced by drinking, by the venereal disease, or by fighting, except in self-defence, shall receive no benefit. If any member whilst in the receipt of an allowance, be found gaming or intoxicated, or out of his own house after a certain hour in the evening, he is subject to heavy penalties, very often expulsion. If any member appear at a meeting of the society in a state of intoxication, or uses rude or provoking language to any person present, or is guilty of profane swearing or cursing, or offers to lay wagers, he is fined; in some cases he is fined if he come to the meeting with out being clean in dress and person; and in other cases, attention to this object is recommended without being enforced.

There are besides other rules very generally adopted, of which we do not perceive the use: one of them is, that none of the members shall belong to any other association of the kind. Surely if a member comply with all the rules of one society, it can be no detriment to that society if he belong to another. By another, a member while receiving aid is not allowed to work: this, no doubt, was designed to guard against that sort of imposition to which such societies are exposed, namely, the payment of a bounty at seasons when it is not required; but a little arrangement of a different kind would obviate this: for surely none can be so ignorant as not to know that there are many kinds of sickness in which some kind of labour might be exerted, although not sufficient to obtain for the labourer full wages: such a clause is therefore evidently calculated to injure the funds of every society by which it is adopted: but a clause regulating the relief to the sick person in proportion to what he can himself earn, must be advantageous.

We have thus given an outline of these societies, and although these, as well as **BANKS FOR SAVINGS**, are not free from the imperfection inseparable from the present state of existence, yet we think, under wise superintendence, that they have both been, and may yet be, productive of much good. It is not perhaps easy to institute a parallel between **BANKS FOR SAVINGS** and **BENEFIT SOCIETIES**, as they are in many respects so dissimilar; we think, nevertheless, that the former are not so well calculated for the lowest and most numerous rank of the community as the latter. It is true, some of our distinguished patricians have become the advocates for Savings Banks. But we fear it too often happens, that men in elevated situations imagine that they see the *lowest* order of society, when they see but the lower. The "Corinthian capital" looks down and mistakes the cornice of the pediment for its base. While the great are providing for their immediate dependants, they seem to be providing for the poor. By a Savings Bank, a butler may lay up money enough to keep a public house, or a lady's maid be enabled to open a milliner's shop; but a Benefit Society may keep a ploughman and his family from the workhouse.

Benefit Societies are now entitled by the law to sue for property possessed in common through the medium of the treasurers and trustees; but to obtain this advantage it is necessary that the society should make known all its rules to the justices of the peace, and obtain their approbation. It is also ordered by law, that no fee shall be taken by any officer or minister, in the courts, and that the proceedings shall not be chargeable with any stamp duty.

Nevertheless, the access to justice is not sufficiently easy: a suit at law in behalf of a Benefit Society, is still attended with so much trouble, and so much expense, that, virtually, the doors of the courts are well nigh shut upon them down to the present hour. It is evident, that to give Benefit Societies all the salutary operation of which they are capable, some *more* is wanting, where,

frer from the superstitious perplexities of barbarous law, the matter of all applications may be immediately tried, in the way of natural and rational inquiry; the parties themselves and their witnesses instructing the judge upon their oaths, and receiving his award without delay, and without expense. If every man who supposed himself aggrieved by his club, and every club which had a complaint against an offender, could receive justice on these terms, the business of such societies would be very simple, and their benefits sure. The Judge might be a single Justice of the Peace, who should hold a regular tribunal for this purpose, and go through immediately, even to execution, with all disputes, reserving an appeal to one of the neighbouring Justices, upon whom the parties should mutually agree. Upon no part of the proceedings should there be the shadow of a tax, or a fee, and as lawyers would be altogether unnecessary, and the witnesses would in general be few and at hand, justice would in general be done without an hour's delay.

BENEVOLENCE, in ethics, denotes a deep-felt desire for the good and well being of the whole human race, and, indeed, for all animated nature: evincing itself as ability and opportunity offer, both by words and deeds: in the cheerful, prompt, and diligent practice of every thing which may promote the happiness and comfort of all.

Benevolence is one of the most dignified moral qualities of the mind. It is not confined to person, age, sect, colour, country, difference of opinion, or any other of the infinite diversities of nations and people into which the earth is divided. The truly benevolent can scarcely admit anger, and never revenge, to be an inmate of the breast; well knowing that men become, whatever they are, by habit, education, and a thousand other minute circumstances, over which individually they have little control; and that as the character is formed for the individual, and not by him, he becomes what he is by a concurrence of those circumstances, which

are powerful in their operation, and irresistible in their effect. The benevolent mind, therefore, in contemplating the vast family of man, must always feel sincere and tender compassion for the errors and vices into which so many of our race are constantly running; but knowing also the powerful effect of motives and circumstances, the benevolent mind will always be on the alert to alter those motives to improve those circumstances, and of course by such means to improve also the moral and physical well being and happiness of the species.

The cultivation and practice of benevolence, in its proper and most extensive sense, is by no means sufficiently insisted on by our moralists and teachers. National and sectarian dislikes, and animosities, are, we are sorry to say, too often the subject of pulpit harangues and conventicle orations. It is the business of benevolence to destroy these vicious habits of the mind; these mischievous stumbling blocks in the way of harmony and peace: we most cordially and emphatically recommend this *first of all virtues* to the study and practice of our readers, assured that did no other motive operate for it, nothing is so well calculated in this sublunary world as benevolence, to make the human mind *satisfied with itself*; a state beyond all others of greatest moment and value. See **CHARITY**.

Benjamin. See **BENZOIN**.

BENT-GRASS, *Agrostis*, a genus of which there are at least forty-six known species; eight are common to our own fields and hedges.

The *Spicaventi*, or Silky Bent-grass, grows to the height of three feet or more in dry sandy fields. It grows in abundance on the sand hills near the sea, in many parts of England and Wales; its long roots are peculiarly well calculated to retain the sand, and prevent its being blown away by the winds; for this purpose it is also frequently planted. The stalks are used for a variety of domestic manufactures, such as bee-hives, table-mats, &c., and are considerably more neat, firm, and

durable than straw. We do not think sufficient attention has been paid to this article; it must be, we doubt not, by proper management, superior to straw for Ladies' bonnets, &c.; and as it will grow where no other vegetable whatever exists, on the head of economy it must be valuable.

BENZOIN, or as it is more commonly called, *Gum Benjamin*, is obtained from a tree, the *Styrax Benzoin*, a native of Sumatra, by wounding the bark near the origin of the lower branches. The tree is never wounded under six years of age; and cannot sustain these annual incisions above twelve years. A tree yields about three pounds of the gum annually. It is brought to this country in masses, composed of white and light brown pieces, which easily break between the fingers. It is extremely fragrant, especially when heated: in a cold state it has a sweetish subacid pungent taste.

Benzoin is regarded as expectorant, and was formerly given in asthmas, and other affections of the lungs. It is now rarely employed internally; but is used principally for preparing the acid of benzoin, and as an ingredient in the compound tincture of benzoin. See the two following articles.

BENZOIC ACID, or as it is more commonly called, *Flowers of Benjamin*, may be obtained from the preceding article, thus: take of benzoin a pound and a half; lime fresh burnt four ounces; water a gallon and a half; muriatic acid four fluidounces. Rub the benzoin with the lime; then boil them in a gallon of the water for half an hour, constantly stirring with a spatula, and pour off the liquor when cold. Boil what remains in four pints of water, and pour off the liquor as before. Afterwards mix the liquors together and boil them to one half; then filter them through paper, and gradually drop in the muriatic acid until no more precipitation takes place. Finally, having poured off the liquor, dry the powder in a gentle heat; then put it into a proper vessel placed in a sand-

bath, and with a moderate fire sublime the benzoic acid.

This acid, when pure, is inodorous; but as it is usually found in the shops, it has a slight aromatic odour. Its taste is pungent and acidulous. It is in minute crystals very light, flaky, and soft to the touch, white, and of a silky lustre.

This acid is stimulant, and is an ingredient in the compound tincture of camphor; but it is of little value as a remedy. It is sometimes used as a cosmetic, but its smell is, we presume, its only recommendation.

BENZOIN, COMPOUND TINCTURE OF, is the article commonly known in the shops under the name of *Friar's Balsam*. It is prepared in the following manner: Take of benzoin bruised, three ounces; storax strained, two ounces; balsam of Tolu, one ounce; socotrine aloes, bruised, half an ounce; rectified spirits of wine, two pints. Macerate, in a vessel close stopped, for fourteen days, then pour off the clear tincture. See **TURLINGTON'S BAL-SAM**.

This is a stimulating expectorant, and as such is sometimes prescribed in chronic catarrh, and old asthmatic cases; but it is chiefly employed as an external application to wounds and languid ulcers, which it gently stimulates, and shields from the action of air. It is also frequently applied to recent wounds, but, except when the bleeding is profuse, we do not know how it can be of use. This tincture is decomposed by water, and therefore, when given internally must be rubbed with yolk of egg, or mucilage, to suspend it in aqueous fluids. Its dose is from half a fluidrachm to two fluidrachms or more. It is also sometimes given dropped upon lump sugar, which is a very commodious method.

BERGAMOT, a species of citron, produced at first casually by an Italian's grafting a citron on the stock of a bergamot pear-tree, whence the fruit produced by this union, partook of both the citron-tree and the pear-tree. (See

CITRÓN. The fruit has a fine taste and smell, and its essence, or essential oil, is in general use as a perfume. The *Essence of Bergamot* is extracted from the yellow rind of the fruit, by first cutting it in small pieces, and then immediately squeezing the oil out of them into a glass vessel.

Bethlehem. See **STAR of Bethlehem.**

BETONY, *Betonica*, a genus of plants of which there are eight species: one the *officinalis*, is indigenous to our woods and heaths. Like many other plants, formerly in high medical estimation, this is now almost entirely neglected. It has been sometimes employed by tanners as a substitute for bark; and the leaves and branches will dye wood of a brown colour, when previously steeped in a solution of bismuth.

BIENNIAL PLANTS are those of only two years' duration. Being raised from seed they generally attain perfection the first year; the next they produce their flowers and seeds, and soon afterwards decay. The cabbage, carrot, parsnip, beet, onion, leek, &c.: the Canterbury-bell, French honeysuckle, wall-flower, stock-July-flower, sweet-william, common pink, carnation, &c. are biennials: some of these, and other biennials which we have not room to name, continue to produce blossoms and seed in the third year, or even longer, but they are generally less vigorous and less perfect.

BIG. See **BARLEY** and **BEAR.**

BIGOTRY may be defined a pertinacious adherence to an opinion on insufficient grounds, and a contempt for those who think differently: where bigotry exists there is a deficiency in the judgment; when bigotry is accompanied with zeal, it is generally a most mischievous disposition of the mind. The bigot, particularly the religious bigot, is, when in possession of power, generally an oppressor. From the foundation of the Christian faith to the present time, including the tortures of the inquisition, and the burnings in Smithfield, Bigotry has too often lifted her withering arm to blast, as much as in her

lies, the fair surface of the human intellect. To counteract this desolating and injurious state of mind, it cannot be too often inculcated that belief is not an object of the will; that is, we cannot believe or disbelieve at pleasure. We believe on any given speculative subject as well as others, in exact proportion as previous ideas have moulded the mind; an attempt to compel belief, so far from altering our ideas, on religious subjects, perhaps, more particularly, contributes most commonly to fix them more strongly in the understanding; hence the folly of persecution for opinions of any kind. This is a truth which, were it generally felt and acknowledged, would do more to soften and assuage the asperities of all nations, and all sects, and of difference of opinion, than any thing besides. If this truth were once acted upon, we should no more be angry with another for differing from us in opinion, than we should because one person is of a fair complexion and of a short stature, and another of a brown complexion and tall. The argument is universal, and applies not only to religion but to politics, and to every subject where difference of opinion can possibly exist. It is the business of education to teach such important elements: their being universally imbibed, bigotry, we may charitably hope, will be banished from the earth.

BILBERRY. See **VACCINIUM.**

BILE, or **GALL**, a bitter fluid secreted in the glandular substance of the liver; in part flowing into the intestines, and in part regurgitating into the gall-bladder. The branches of the *Vena portæ* contribute most to the secretion of bile; its peculiar blood returning from the abdominal viscera, is supposed to be in some respects different from other venous blood, and to answer exactly to the nature of bile. It is not yet ascertained clearly whether the florid blood in the hepatic artery merely nourishes the liver, or whether at the same time it contributes a certain principle necessary for the formation of bile. It appears that there are two kinds of bile in the human body: the

Hepatic bile, which flows from the liver into the duodenum, is thin, of a faint yellow colour, inodorous, and very slightly bitter; and *Cystic bile*, which regurgitates from the hepatic duct into the gall-bladder, and there from stagnating becomes thicker, the aqueous part being absorbed by lymphatic vessels, and is more acrid from concentration.

Healthy bile is of a yellow green colour, about the consistence of thin oil, and when much agitated it froths like soap and water; its smell is somewhat like musk, especially the putrifying or evaporated bile of animals. Its taste is bitter. Its constituent principles are water, aroma, or spiritus rector, a coagulable lymph, a resinous oil, and soda. Bile is accordingly a soap, and like other soap is successfully employed to remove grease from clothes, &c. When the resinous oil is in excess, so as not to be soluble by the bile, it becomes crystallized, forming the calculi, or gall-stones found in the gall-bladder. The retardation, moreover, of this matter in the pores, or parenchymatous substance of the liver, is often the cause of many hepatic diseases. See LIVER and GALL-STONES.

The gall-bladder in the human body is generally capable of containing about an ounce. In the elephant, stag, all insects, and worms, this reservoir is wanting; and consequently, the bile which they secrete passes at once into the intestinal canal. The direct and real use of the bile does not, even now, seem to be clearly ascertained. It concurs, however, in producing the following effects: In separating the chyle from the chyme: thus chyle is never observed in the duodenum, before the chyme has been mixed with the bile; and thus it is that, oil is extricated from linen by the bile of animals. By its acridity the bile excites the peristaltic motion of the intestines; hence the bowels are so inactive in persons with jaundice. It imparts a yellow colour to the excrements; hence the white, or clay-colour of the feces in jaundice, in which disease the flow of bile into the duo-

denum is entirely prevented. The bile also prevents the abundance of mucus and acidities in the primæ viæ; hence also acid, and other sabulous collections, are so frequent in the intestines from deficient or inert bile. See CHYME and CHYLE.

A deficiency or redundancy of bile accompanies, if it be not the cause of, many diseases. See JAUNDICE, YELLOW FEVER, and LIVER.

BILIOUS, a term applied to diseases which arise from too copious a secretion of bile; but it is too generally, and indiscriminately applied to a variety of diseases in which the appetite, the stomach, and intestines, are more or less affected. In all such diseases it is most probable, that the bile is in a greater or less degree concerned, but why many of them should be called bilious we are at a loss to discover. The terms *nervous* and *bilious*, as well as an attendant upon the latter, *sick head-ach*, are mighty convenient for the accommodating medical practitioner, or quack, whose address is superior to his skill, and whose patients are better judges of his science at whist, than of his medical qualifications.

BILL, or **BILL-HOOK**, in husbandry, is an edge tool made of iron with a curved point. It is much used by gardeners for pruning trees, and also by woodmen and basket-makers. When fitted to a short handle it is called a hand-bill, when to a long one a hedge-bill.

BILL, in law, a declaration in writing, either of some injury which the plaintiff has suffered from the defendant, or an offence committed by the person complained of, against some law or statute of the realm: a bill in chancery is of the first kind; a bill of indictment is of the second.

BILL, in commerce, is a written security for the payment of money given under the hand of the debtor, and usually payable to the order of the person in favour of whom it is drawn, commonly called a *Promissory-note*, or *note-of-hand*; or a note issued by a person, or persons, and payable to bearer on

demand, such as *bank-bills*; or a note drawn by the creditor, and if after date accepted by the debtor, commonly called a draft. These last, as well as the first, are frequently drawn not only on demand, but also payable at some certain period from the date, such as two months, twenty-one days, &c. When such notes drawn after date, or sight, or otherwise, pass between the merchants of one country and those of another, they are called *Bills of Exchange*. But in law, all the preceding kinds of bills, except the last, are called *Inland Bills of Exchange*.

The payment of all these kinds of bills, in case of failure, may be legally enforced, and on proof of the hand writing, they are admitted as evidence of a debt. These bills are subject to stamp duties, according to the sum and time for which they are drawn, (a distinction being made by law in the price of the stamp, between Bills at two months, and those of a longer date.) If they be not drawn on proper stamps, or on stamps of a higher value, they are illegal, and of no use.

Foreign Bills of Exchange drawn in England are also liable to a stamp duty.

BILL OF LADING, an instrument signed by the master of a ship, acknowledging the receipt of a merchant's goods, and obliging himself to deliver them at the place to which they are consigned in good condition. Bills of lading are also subject to stamp duties.

BILL OF SALE is an instrument by which a person, who delivers goods as a security to the lender of a sum of money, empowers him to sell them, if the sum borrowed be not repaid on the conditions specified in the instrument.

BILL OF RIGHTS, a declaration delivered by the Lords and Commons of England to the Prince and Princess of Orange, February 13th, 1688; and afterwards enacted in Parliament, when they became King and Queen. In this bill it is declared that the pretended power of dispensing with laws, or the execution of laws by regal authority, is illegal; that levying money for, or to the use of the crown by pretence of

prerogative, without grant of Parliament for longer time, or in other manner than the same is, or shall be granted, is illegal; that the raising, or keeping a standing army within the kingdom in time of peace, unless with consent of Parliament, is against law; that the subjects which are Protestants may have arms for their defence, suitable to their conditions, and as allowed by law; that election of members of Parliament ought to be free; that the freedom of speech, and debates in Parliament ought not to be impeached, or questioned in any court or place out of Parliament; that excessive bail ought not to be required, nor excessive fines imposed, nor cruel and unusual punishments inflicted; that jurors ought to be duly impanelled and returned, and jurors which pass upon men in trials for high treason ought to be freeholders; that all grants, and promises of fines, and forfeitures of particular persons before conviction, are illegal and void; and for the redress of all grievances, and for the amending, strengthening, and preserving the laws, Parliaments ought to be held frequently. And these were claimed, insisted upon, and demanded as their undoubted rights and liberties. This Bill, together with *MAGNA CHARTA*, and the Act of *HABEAS CORPUS*, as it is usually called, form the principal bulwarks of the liberties of Englishmen. See these articles.

BILLS OF MORTALITY are weekly lists compiled by the parish clerks in and about London, containing the numbers of such as die, and specifying of what disease, as well as those that are born every week. These bills are founded upon the reports of sworn searchers, who view the body after the decease, and deliver their reports to the clerk. The Bills of Mortality were first begun to be taken by the company of parish clerks in London, in the year 1592; and in 1594 the weekly account was first made public. In 1595 they were discontinued upon the ceasing of the plague; but in 1603 they were resumed, and have been continued regularly ever since. The original bills com-

prehended only 109 parishes, but others have been, from time to time, added to them, so that now they comprehend 146 parishes: of which, 97 are within the walls, 16 without the walls, 23 are out-parishes in Middlesex and Surrey, and 10 parishes are in the city and liberties of Westminster. But it ought to be known, that how correct soever in other respects, little dependance can be placed upon these bills, relative to diseases, except with respect to the most common and determinate.

BINDWEED, *Convolvulus*, in botany, a genus of plants containing a hundred and twenty species, distributed over the four quarters of the globe. The following are chiefly worth noticing:

The *Sepium*, with arrow-shaped leaves, flowers generally solitary, of a white, or purplish hue. It has been commonly denominated the Larger white Bindweed. It is a troublesome weed in gardens, and is also found wild in our hedges. Its root is very acid and purgative. If the roots of this plant be exposed in the open air to frost, they will be effectually destroyed.

The *Arvensis*, or Small Bindweed, is also a common plant in our fields and hedges, but particularly troublesome in gardens of a gravelly soil: its white and red flowers appear in June and July.

The *Soldanella*, or Sea Bindweed, grows on the sandy shores of the sea, but cannot be long preserved in gardens; its purple flowers blow in July.

The *Scammonia*, with flowers of a pale yellow. The branches of the plant are tender, and trail on the ground, extending on every side to the distance of ten or twelve feet. The concrete juice of the root is the scammony of the shops. It is a native of Syria. See SCAMMONY.

The *Purpureus*, Purple Bindweed, a native of America, with white, red, or purple flowers; and annual stems, about eight or ten feet high.

The *Nil*, or Blue Bindweed, also an American plant, not quite so high as the last mentioned. Its flowers are

of a deep blue, or indigo colour, whence its name of nil, or indigo. It is a beautiful plant, and flowers all the latter part of the summer.

The *Turpethum*, or Turpeth Bindweed, a native of Ceylon.

The *Jalapa*, or Jalap Bindweed, a native of Mexico, with twining herbaceous stems, rising eight or ten feet high, from a root which when bruised, discharges like the preceding, a viscous milky juice. The peduncles are one-flowered, resembling those of the greater bindweed. Its root is the Jalap of the shops. See JALAP.*

About half the species have a prostrate, or untwining stem, of which the *Soldanella* is one. Most of them, whether twining or prostrate, may be propagated with care in our own country, either from seeds, or layers, except the *Turpeth* and *Jalap* Bindweeds, which are too tender for this purpose. Those with twining stems should be furnished with props, or be planted in the vicinity of trees, whose stems they may climb around.

Bindweed, Black. See climbing BUCK-WHEAT.

BIRCH-TREE, or *Betula*, a genus of which there are about fifteen species, chiefly natives of North America; three, however, are common to our own country. See ALDER.

BIRCH WINE is made in the following manner: the juice, or sap of the birch-tree, the *betula alba*, is obtained, by making about the beginning of March, a hole in the trunk, almost as deep as the pith, under some branch of a well-spreading tree, on its south western side, at about one foot above the ground; a hollow must be fitted to the aperture, through which the sap will flow. The orifice may be afterwards closed with mould, and the wound will heal. To prevent this juice from fermenting, till a sufficient quantity is obtained, the bottles in which it is collected, ought to be immediately stopped, and deposited in a cool place. To every gallon of the juice, add a pint of honey, or a pound of sugar; stir the whole together, and boil it for an hour

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with a few cloves, and a little lemon-peel; at the same time carefully skim off the rising impurities. When cool, a few spoonfuls of new ale should be added, to induce a proper degree of fermentation; after the yeast has settled, the wine should be bottled, and kept for use.

This wine was formerly in repute, as a remedy for nephritic disorders, but is not now in use for such purpose; but it may form an agreeable variety in our home-made wines.

BIRD, a biped animal, too well known to need description. The science which treats of birds in general, is called *Ornithology*, to which article we refer for particulars respecting the feathered tribe. But the uses, &c. of the various species, will be stated under their respective heads.

Bird Cherry. See PLUM.

Bird's Eye. See PRIMROSE.

BIRD'S FOOT, Common, or *Ornithopus perpusillus*, is an indigenous plant, with yellow flowers, which blow in July and August. It affords good fodder for sheep, when grass is scarce in the latter end of Autumn.

Bird Grass. See Roughish MEADOW GRASS.

BIRD-LIME. A glutinous and viscid matter of a peculiar kind, spread upon twigs, and other substances, for the purpose of entangling birds. It is prepared from various substances, and in various ways, but chiefly from the holly bark, which must be boiled for this purpose, for ten or twelve hours, the green outer coat, being hereby separated from the inner. It is then covered up for a fortnight in a moist place, and afterwards pounded into a uniform paste, washed in water, fermented four or five days, and laid up for use. When used, it is incorporated with a third of its weight of nut oil, or other thin grease.

The mistletoe also affords a viscid juice, even superior to holly; and a young shoot of common alder, if cut through, will give out a similar secretion. The roots of all the hyacinth tribe, the asphodel, the narcissus, and the black bryony root, yield also a bird-

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lime of nearly equal qualities, and in large quantity.

Bird-lime much resembles the *caoutchouc*, or Indian rubber, imported from South America; if it could be hardened, it might probably be substituted for the latter article.

BIRDS, preservation of. Birds may be preserved in the following manner; after opening the bird by a longitudinal incision from the breast to the vent, separating the fleshy parts from the bones, and removing the entrails, eyes, brains, and tongue; the cavities, and inside of the skin, are to be sprinkled with the following powder: Take of corrosive sublimate $\frac{1}{2}$ lb., nitre $\frac{1}{2}$ lb., burnt alum $\frac{1}{2}$ lb., flowers of sulphur $\frac{1}{2}$ lb., camphor $\frac{1}{2}$ lb., black pepper, and coarsely-ground tobacco, of each one pound: mix these ingredients well together, all of them being previously powdered, and keep them in a glass vessel closely stopped. First insert the eyes, and stuff the head with cotton, or tow; then pass a wire down the throat, through one of the nostrils, and fix it into the breast-bone; wires are likewise to be introduced through the feet, up the legs and thighs, and fastened into the same bone; the body should be afterwards stuffed with cotton to its natural size, and the skin sewed over. In whatever position the bird is placed to dry, the same will be afterwards retained.

Small birds may be preserved in brandy, rum, arrack, or first runnings; but by these means, the colour of the plumage is liable to be extracted by the spirit. Large sea fowls, having thick strong skins, may be skinned; the tail, claws, head, and feet, are to be carefully preserved, and the plumage stained as little as possible with blood. The inside of the skin may be stuffed, as recommended above.

Or the following mixture may be used, it is said successfully, in the preservation of birds, after their being previously prepared, by having the intestines, brains, &c. removed: common salt one pound, powdered alum four ounces, ground pepper two ounces.

The cavity of the bird is to be filled with this mixture, and the lacerated part should be properly stitched; the head also, after the brains are withdrawn, is to be filled with it. After being suspended by the legs for a few days, the bird may be fixed in a frame in its natural attitude.

BIRTHWORT, *Aristolochia*, a genus of plants, containing twenty-seven species, chiefly natives of America, or the South of Europe. The following are the principal:

The *Longa*, Long-rooted Birthwort, the roots only of which are used in medicine, and these but rarely, as an aromatic stimulant, in gouty affections.

The *Rotunda*, or Round Birthwort, the roots of which are used indiscriminately with the preceding. They are natives of the South of Europe, whence the roots are brought to us dried, but both the plants will bear the colds of our own climate. The dose of the powdered root, is from a scruple to a drachm, or upwards.

The roots of both the preceding are used occasionally as warm stimulants for cattle; and with this view they form an ingredient in Diapente. See *that article*.

The *Anguicida*, or Snake-killing birthwort. The juice of this plant has the property of stupifying serpents, that they may be handled with impunity. One or two drops are sufficient, and if more be dropped into their mouth, they become convulsed. The juice is also esteemed as a preventive against the effects usually produced by the bite of these venomous animals.

The *Clematis*, Climbing Birthwort; an extract is sometimes prepared from this plant; and is esteemed good in gouty affections.

The *Serpentaria*. This plant is the *snake root*, of the Pharmacopœia. See **SNAKE ROOT**.

The *Trilobata*, three-lobed Birthwort, is diuretic, and employed in America against the bite of serpents.

BISCUIT, a kind of hard-baked bread, made of fine flour, having other ingredients occasionally mixed with it,

such as eggs, sugar, and rose or orange-flower water, aniseeds, citron-peel, and almonds, whence we have seed-biscuit, fruit-biscuit, long-biscuit, Naple-biscuit, sponge-biscuit, &c.

BISCUIT, SEA. The dough for this biscuit is made of flour and water only. At the Victualling Office at Deptford, it is worked by a large machine. When perfectly prepared, it is handed over to a workman, who slices it with a large knife, for the bakers, of whom there are, five. The first, or moulder, forms the biscuits two at a time; the second, or marker, stamps and throws them to the splitter, who separates them into two pieces, and puts them under the hand of the chucker, the man who supplies the oven, whose work of throwing the bread on the peel, must be so exact, that he cannot look off for a moment. The fifth, or the depositor, receives the biscuits on the peel, and arranges them in the oven. All the men work with the greatest exactness, and are like parts of the same machine. They deposit in the oven, seventy biscuits in a minute, and this is accomplished with the regularity of a clock, the clacking of the peel operating like the motion of the pendulum. There are twelve ovens at Deptford, and each will furnish daily, bread for 2040 men.

As the oven stands open during the whole time of filling it, the biscuits first thrown in, would be first baked, were there not some counteraction to such an inconvenience: the man who forms the pieces of dough, by imperceptible degrees, proportionably diminishes their size, so that the biscuits which are last put into the oven, during the whole progress of filling it, are equally baked with those which are put in first.

These biscuits are kept in dry lofts over the oven, till they are sufficiently dry to be packed in bags, without danger of getting mouldy; and are afterwards put into bags of one hundred weight each, and removed into storehouses for immediate use. It is to be regretted that sea-biscuit, although it

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will, in general, keep tolerably well for twelve months, often carries in it a principle of destruction : insects are often found in it, giving it a disposition to mould ; and sometimes a want of cleanliness in the bread-room of the vessel, contributes to the same effect.

BISHOPPING, an operation performed on the mouths of horses, &c. by dealers, with a view of passing them off for young animals, when the natural marks are obliterated. However dexterously this operation may be performed, it is easily discovered by a person accustomed to examine the teeth of horses ; and such as have not had this advantage, may observe a want of corresponding marks in the state of the tusks, or the marks of the upper teeth ; and if the horse's age is considerable, it may be known by his general appearance, by grey hairs over the eyes, and about the forehead, by the teeth being much longer than in young horses, and approaching more to the horizontal position. In black horses, the grey hairs are sometimes concealed, by means of black powder, which may be discovered by passing the hand over the eyes. See **AGE**.

BISMUTH, sometimes called Tin-glass, is a brittle, white metal, with a slight tint of red ; its specific gravity is 9.8. It fuses at 476°, and always crystallizes on cooling. It is found native, combined with oxygen, and also with arsenic and sulphur.

Bismuth readily combines with most other metallic bodies, increasing their fusibility, and forming with them alloys, some of which are applied to various purposes. A compound, consisting of equal parts of this metal and tin, is fusible in a heat of 280°. Equal parts of this metal and lead, produce an alloy of a brilliant white colour, much harder than lead. Bismuth lead, and tin, in the proportion of 8, 5, and 3 parts respectively form, by melting, a metal so remarkable for its fusibility, that when held on a piece of stiff paper, over a burning candle, it becomes liquid without scorching the paper ; and boiling water reduces it to the fluidity

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of quicksilver. If instead of eight parts of bismuth, only one be used, the composition is plumbers' solder. Equal parts of these metals form a mixture, sufficiently fusible for anatomical injections. Bismuth is used for a variety of purposes in the arts. It is also employed as an ingredient in sympathetic ink. See **INK**, and **DYEING**.

BISSEXTILE, or **LEAP YEAR**, a year consisting of 366 days, and occurring every fourth year, by the addition of a day in the month of February, which then consists of 29 days. This is done to recover the six hours which the sun takes up nearly in its course, more than the 365 days commonly allowed for it in other years. This day, thus added, was by Julius Cæsar appointed to be the day before the 24th of February, which among the Romans was the 6th of the calends of March, and which on this occasion was reckoned twice ; whence it was called bissextile : *bis sexto calendas Martius*. See **CALENDAR**.

BISTORT Great, or Snakeweed, *Polygonum historta*, grows in many parts of Europe, Siberia, and Japan, and is indigenous to Great Britain ; it is found generally in moist meadows, flowering in May and June. The root is perennial, woody, and crooked ; the stem rises nearly two feet in height. The leaves are ovate, of a fine green colour, on the upper surface ; the flowers are small, and of a pale rose colour.

The dried root is inodorous, and has a very austere taste ; it is astringent and tonic. It is employed in hæmorrhages, obstinate fluxes, and all diseases in which simple astringents are indicated. It has also been given in intermittents. Externally, a strong decoction of it is a useful lotion for spongy gums, and ill-conditioned ulcers. But it is not much used in the modern practice of medicine. The dose of the powdered root, is from fifteen grains to one drachm, twice or thrice a day.

BITE OF A MAD DOG, or of other mad animals, is an unfortunate accident, the disease arising from which is

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commonly called **HYDROPHOBIA**, in consequence of one of its peculiar symptoms being a dread of even the sight of water; it is also called *canine madness*.

It has, however, been fully proved, that men, horses, asses, oxen, pigs, and much more frequently, foxes, wolves, cats, and dogs, become afflicted with this disease, *without having been bitten*.

Many causes may produce this dreadful disease; it has been supposed to be occasioned by suffering the dog to feed upon putrid meat, without supplying it with sufficient water; but it more probably arises from specific contagion, like the small-pox, &c. It is most prevalent during excessively hot summers, and very cold winters.

The *signs of madness in dogs* are the following: the disease begins by the dog being languid, and more dull than ordinary; he seeks for obscurity, remains in a corner and ceases to bark; but growls incessantly at strangers, and that without any apparent cause: he refuses food and drink, his walk becomes a reel like that of a person almost asleep; after two or three days he walks like a drunkard, and frequently falls. His hair stands erect, his eyes fixed and haggard, his head hangs down, his mouth is wide open, and contains much frothy saliva; the tongue is protruded, and his tail turned inward; he avoids water, (some respectable authorities, however, deny the existence of this symptom) which even appears to redouble his evils; he suffers from time to time an increase of furor, and endeavours to bite every object, not excepting his master. The light and vivid colours augment his rage. At the end of thirty or thirty-six hours, he dies in convulsions. The body putrifies in the most rapid manner, and diffuses a most infectious odour. It ought not to be left exposed above the ground, lest it should be eaten by other animals, which might in consequence become mad also. The hole into which the body is put, should be very deep; and every part of the place in which he has been previously confined, should be well washed with lime-water, and also the vessels from which

he took his food. The person who touches his body should wash himself with vinegar.

With regard to the immediate cause of this disease amongst mankind, there is not the least doubt that it arises from the saliva of the mad animal becoming mixed with the blood. It does not operate, it should seem, through the *cuticula*, or scarf-skin, although we do not advise a reliance on this: for if by any means the saliva touch any part of the body, careful ablation should be immediately used. But when the scarf-skin is rubbed off, the smallest quantity is sufficient to communicate the disease; a slight scratch, with the teeth of a mad animal, has been found as pernicious as a large wound. It is certain, also, that the infection has been communicated by the bites of dogs, cats, wolves, foxes, weasels, swine, and even cocks and hens, when in a state of madness. But it does not appear that it is communicable from one hydrophobous person to another, by means of the bite, or any other way.

A person bitten by a mad animal rarely experiences any symptoms before the thirtieth or fortieth day. In some few instances the disease has commenced in seven or eight days after the accident; and sometimes it does not appear till many months after the bite.

The bite, if not prevented, will, in general, be healed long before the symptoms of the disease make their appearance, and frequently with the greatest ease; although sometimes it resists all kinds of healing applications, and forms a running ulcer, which discharges a quantity of matter for many days.

The approach of the disease is known by the cicatrix of the wound becoming high, hard and elevated, and by a peculiar sense of pricking at the part; pains shoot from it towards the throat; sometimes it is surrounded with livid, or red streaks, and seems to be in a state of inflammation; although frequently there is nothing remarkable to be observed about it. The patient becomes melancholy, loves solitude, and

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has sickness at the stomach. Sometimes the peculiar symptom of the disease, the dread of water, comes on all at once.

With regard to the affection of the mind itself, it does not appear that the patients are deprived of reason; some have, merely by the dint of resolution, conquered the dread of water, though they never could conquer the convulsive motions which the contact of liquids occasioned; while their resolution has been of no avail: for the convulsions and other symptoms increasing, have almost always destroyed the unhappy sufferer, generally in the course of three or four days from the appearance of the disease.

In this distemper the symptoms are so various, that they cannot be enumerated, no two cases being alike; and even the dread of water, although generally accompanying it, is said not to be universal.

However, the treatment for the cure, should commence immediately after the accident.

The most effectual cure for this disease is, as soon as possible after the infliction of the wound, to cut it out, so carefully including even the parts immediately surrounding it, both at the bottom and sides, that a probability may not exist of the knife's coming in contact with the wound made by the animal. But if this should be objected to, or cannot be complied with, from the nature of the part, the following proceedings are to be adopted:

The individual should be stripped, and his clothes put into water, to prevent contagion.

The wound should be allowed to bleed, and pressed in different manners so as to favour the flowing of blood; it should then be washed with warm water in which salt or soap has been dissolved. If the wound is small but deep, it should be enlarged; but if only the skin has been raised, this operation is unnecessary. It may be necessary to observe that the wound often appears slight, when the poison has penetrated deeply.

After the wound has been washed it should be rubbed with a hard cloth so as to irritate it, and cause the blood to flow; it would be useful to apply a cupping-glass.

The wounds and even scratches should be cauterized with some caustic, but the hot iron, butter of antimony, or oil of vitriol, are to be preferred. The cauterization ought to be extensive and deep: if slight, it is insufficient to prevent the disease, and nothing can be feared from the use of caustics. If the wounds are numerous, they should be cauterized one after the other, beginning with those of the head and face, and leaving a day's interval between each.

Six or seven hours after the cauterization, apply a blistering plaster, prepared as follows: Take of yellow wax four ounces; horse turpentine six drachms; olive-oil one ounce and a quarter; melt these by a gentle fire, and when nearly cold, add of cantharides in fine powder three ounces; of mastic two drachms. If only one plaster be wanted, smaller quantities than is here set down will be sufficient. At the end of twelve hours remove this and open the bladder formed; another plaster may be then laid over the part, consisting of six drachms of powdered cantharides formed into a paste with crumbs of bread and strong vinegar. This may remain on the wound another twelve hours: and afterwards it should be dressed twice a day with the following cerate, spread upon soft leaf, or piece of rag: take of powdered cantharides half a drachm, wax cerate one ounce; mix them thoroughly. When the eschar falls off, which usually occurs from the fifth to the eighth day, the wound may be healed, provided it appears that the cauterization has been deeper than the injury inflicted by the tooth of the animal; if the contrary be the case, cauterize anew, and when the second eschar falls off, the suppuration is to be maintained for forty or fifty days; to effect this put a pea, bean, or a morsel of gentian, or orris root, into the wound; and dress it with the cerate mentioned above.

BITE of a MAD DOG

If the bite be in the head, all the hair should be removed so as to be enabled to perceive and cauterize the wound. If inflammation and swelling follow the cauterization, emollient fomentations must be used, and the part dressed as a simple wound.

When the lips, cheeks, or eye-lids, have been bitten, the caustic must be applied so as to penetrate very deeply, and the suppuration maintained a long time. The cauterization of the eye-lid requires some precaution. It should be raised as much as possible from the eye, and the edges of the bite touched with a piece of lint soaked in the caustic; it will be convenient to affix the lint to the end of a bit of wood. If the saliva has been applied to the globe of the eye, the caustic must be passed gently over the part, by the aid of a fine pencil. There is no other danger in so doing, than of causing a slight inflammation; in this case the eye must be washed with a decoction of linseed, or marsh-mallow root, or gum-water, to which a few drops of laudanum may be added. If the wound has been in the mouth, it should be washed with vinegar and water, and then cauterized with a hot iron; in this case, the liquid caustics would have the inconvenience of mixing with the saliva and extending their action to the surrounding parts.

When the wound is near an artery, and we plainly see, or feel the pulsation, we must confine ourselves to touching the surface lightly with a pencil dipped in butter of antimony; by such means we avoid rupturing the artery. There will be some danger in cauterizing the bite in the manner just mentioned, if instead of being covered with a portion of flesh, or cellular membrane, the artery should be bare; all that can be then done is to put a small quantity of powdered cartharides, or some acrid ointment upon the wound.

If the bite has taken place some time, and we have the certainty that the animal is mad, the part must be opened without delay, cauterized with hot iron, and the suppuration continued for some time.

The internal treatment should be, as follows: during the first few days the transpiration is to be promoted by the use of the volatile alkali; either *sal volatile*, *spirits of hartshorn*, or *spirits of sal ammoniac*, may be taken to the extent of six or eight drops in water, every two hours. In cases where the wound is much inflamed, and very painful, from 12 to 24 grains of the following powder, mixed with honey, should be given every night, omitting the volatile alkali: take of ipecacuanha half a drachm; of extract of opium half a drachm; of sulphate of vitriol one drachm and a half; let these be reduced into fine powder, and intimately mixed.

If the pulse be hard and full, bleed the patient. Emetics and purgatives must be given if the stomach is loaded, the tongue furred, and the mouth clammy. At all events, the bowels must be kept rather open than otherwise. Moderate exercise and light food, should be prescribed; but if there be much fever, the strictest regimen must be observed.

We have here stated those means, which, in our judgment, are the best calculated to prevent the deplorable effects of the bite of mad animals; as, however, other means have occasionally been adopted, in the cure of this disease, we shall mention some of those which have been used with most success, although they cannot be relied upon as a cure.

M. BRUGNATELLI has reported a number of facts which tend to prove, that when the oxymuriatic acid, *chlorine*, is applied to wounds caused by the bite of mad animals, it prevents hydrophobia from taking place. Cluzel also asserts, that the internal use of the same remedy saved several persons bitten by a mad wolf.

The root of the water plantain, (*alisma plantago*) has been lately recommended for the cure of this disease: it should be dried in the shade, and when powdered, strewed upon bread and butter. Ten or twelve grains of this medicine may be given immediately

BIT

after the wound is cauterized, and repeated at the end of two hours.

A case of a female has been mentioned, in which two bottles of brandy drunk in the course of two days, effected a cure.

Warm bathing has, sometimes, had a very good effect as a palliative, although it cannot be trusted to as a radical cure. Cold bathing, and sea bathing, have also been tried, but we cannot speak of their success with confidence.

Excessive bleeding, even to fainting, has also been recommended, but without success; nor have preparations of camphor, quicksilver, and opium been more fortunate. But musk and opium in large doses, will sometimes relieve the patient from some of the most urgent symptoms when the disease has taken place, and the dread of water is present.

We are obliged to conclude our article on this distressing and dreadful malady, by informing our readers, that a specific for it yet remains to be sought.

Treatment of animals. Oxen, sheep, and horses, when bitten by a mad animal, suffer the same symptoms as man, but with much more rapidity.

If the tail or ear has been bitten, the part should be removed, and the wound cauterized with a hot iron, and then dressed with the following digestive ointment; take of horse turpentine two ounces; of olive-oil two ounces; the yolk of two eggs, mix the turpentine well with the eggs, and add the oil by degrees.

When the bite has occurred in a situation where the injured part cannot be removed, the hair must be shaved off, and the wound enlarged with a bistoury; after which, let it be well cauterized and dressed with the ointment we have just described. When it is desired to increase the suppuration, half a drachm of caustic potash may be added. The wound ought not to be allowed to heal till after the lapse of several weeks. It may be sprinkled, from time to time, with powdered cartharides, or touched with caustic.

The person who dresses the animal,

BITE

ought not to forget to wash his hands well with soap and water, or vinegar and water. After the death of the animal, the skin must not be taken off, lest the disease should be thereby communicated.

But, as no certain and effectual means are yet known by which the fatal consequences of the bite of a mad dog, or other animal, can be prevented, perhaps the most advisable course to be pursued with a dog, or other animal, which happens to be bitten by any animal known to be mad, is to destroy it immediately.

Upon a review of this disease, and the terrible consequences attendant upon it; and, at the same time reflecting that it is, in Great Britain at least, generally, if not always, caused by the dog, we ask emphatically, what uses are to be found in this animal, affectionate and faithful as we admit it in health is, to countervail the horrors and distress which overwhelm whole families, by the infliction of this disease? We answer, none, to be placed in the balance against the destruction of human life, and in such a way. Till, therefore, a specific be found for this disease, our advice to our readers is, to have nothing whatever to do with dogs; but to avoid them as they would a pestilence: for the first fondling may be fatal!

BITE OF A VIPER. See VIPER.

BITT, the iron which is attached to the bridle, and put into a horse's mouth. It has also been called a bitt-mouth. In the middle there is always an arched space designed to give room for the tongue; this is called the liberty. As little iron as possible should be put into a horse's mouth; and we therefore seldom use any other than snaffles, cannon-mouth's jointed in the middle, a cannon with a fast mouth, and cannon with a port-mouth, either round or jointed.

The cannon-mouth bitt, jointed in the middle, always preserves the horse's mouth; and, though the tongue sustains the whole effort of it, yet it is not sensible as the bars, which are so delicate that they feel its pressure even through, and thereby the least motion

of the rider's hand is perceived. The larger the bitt is towards the ends which are fixed to the branches, the gentler it will be. We should make use of this kind to a horse as long as we can; that is, if with a simple cannon-mouth we can obtain from a horse all the obedience of which he is capable, it will be useless to employ any other.

Perhaps the best way to fit a horse with a bitt exactly, is to have a great many, and change them till the right one is obtained. But, at all events, the first should be a gentle one, rightly lodged in his mouth, so as not to incommode his lips, nor rest upon his tusks.

BITTER, a principle of a peculiar nature, upon which the taste of many substances depends. Many vegetable and some animal substances are well known to be intensely bitter to the taste, as the wood of quassia, the root of gentian, the flowers and leaves of camomile, the leaves of the hop, the juice of the aloe, many barks, the bile of animals, &c. Hence the vegetables which commonly contain this principle in large quantities, are called bitters.

Most vegetable bitters impart their virtues both to watery and spirituous fluids. They are in general, with some few exceptions, as aloes for instance, useful *tonics*: that is, they have the power of increasing the digestive faculties of the stomach, so as to promote the general health: some of the principal bitters are, camomile flowers, gentian-root, quassia, peruvian-bark, and hops.

Bitter substances are sometimes taken internally for the destruction of worms, but are not often efficacious. They are also employed externally, as antiseptics. See **BARK**, **HOPS**, and **CAMOMILE FLOWERS**.

BITTER-APPLE. See **COLOCYNTH**.

BITTER-SALT. See **EPSOM-SALT**.

BITTER-SWEET. See **NIGHTSHADE**.

BITTERN, in ornithology a species of the *Ardea*. This bird is occasionally pursued by the sportsman: there are two sorts. It inhabits the temperate parts of Europe, Asia, and both Americas. It is three feet two inches long;

migrates northerly in summer: feeds on fishes and reptiles; about sun-set rises in the air to a vast height in a spiral direction, making a prodigious noise; it builds among reeds, and lays from four to five eggs of a greenish ash-colour. In its form it is like the heron, but smaller and more beautifully variegated in its plumage. Bitterns are principally found in sedgy moors, where they breed, particularly within a few miles of the sea-coast, not being very common in the central parts of the kingdom. If brought down by the gun, with only a broken wing, they display great courage; and cannot be with safety secured, till deprived of life. From their scarcity they are esteemed a rarity at the tables of the great.

BITTERN, the brine swimming on the salt first concreted in the salt-works, also the mother-water of sea-salt. See **MAGNESIA**.

BITUMENS, are fossil substances bearing considerable resemblance to oily and resinous bodies. The following are the principal varieties:

Naphtha, a pungent, odoriferous, oily liquid, either colourless, or of a pale brown tint, found upon the borders of the Caspian sea, and in certain springs in Italy. It is considerably lighter than water, volatile, and highly inflammable. When pure it appears to contain no oxygen, and hence is employed for the preservation of potassium and the other highly oxydizable metals.

Petroleum, has most of the properties of naphtha, but it is less fluid, and darker coloured. See **BARBADOES TAR**.

Mineral tar appears to be petroleum further inspissated. It is more viscid, and of a deeper colour,

Maltha, or *Mineral pitch*, is a soft inflammable substance, heavier than water, and may be considered as derived from the exsiccation of mineral tar.

Asphaltum is found abundantly on the shores of the Red Sea, in Albania, and in the island of Trinidad. Its colour is brown or black; it is heavier than water, and readily soluble in naphtha.

Elastic Bitumen, or mineral caoutchouc,

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is found only in the vicinity of Cottleton, in Derbyshire. It is fusible and inflammable.

All the above substances are insoluble in water, and difficultly soluble in alcohol, with the exception of naphtha and petroleum, which are soluble in highly rectified alcohol.

Resin asphaltum is a substance which accompanies the Bovey coal of Devonshire.

Pit-coal.

Peat and Turf.

Mellinite, or *Honey-stone*, is a rare substance found in the brown coal of Thuringia, and in Switzerland. It is of a honey yellow colour; and consists of alumina, combined with a peculiar body, which has been called the *mellitic acid*.

Some of these bitumens are of important uses to mankind; a more particular account of them will be found under the heads, **COAL**, **MINERAL TAR**, **TURF**, &c.

BLACK, the darkest of colours, or rather, in philosophical language, the absence of all colour.

There are many shades, or varieties of this colour. The native black substances, are such as pit-coal, black vegetable juices, cuttle-fish ink, &c. Those which are the product of fire, comprehend charcoal black, soot black, and black metallic oxides. See **DYEING**.

The only native black is the juice of the cashewnut-tree, the *Anacardium occidentale*, which, probably, is the tree which yields the black varnish of China and Japan. See **VARNISH**.

There are also several colours artificially prepared for the use of painters, such as lamp-black, ivory-black, Frankfort-black, &c. See these articles respectively; and also **COLOUR-MAKING**.

BLACKBERRY, the fruit of the common bramble, the *Rubus fruticosus*.

These berries are eaten in abundance by children, and are wholesome and gently aperient. Too large quantities, however, when the stomach is weak, produce vomiting, and great distention of the belly from wind.

Wine and vinegar are occasionally

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made from the fruit of the bramble. See **BRAMBLE**.

BLACK-BIRD, *Turdus merula*, a species of the genus *Turdus*. When young the plumage of the common blackbird is of a rusty black; but at the age of one year, being the period of its full growth, its feathers acquire a deep and glossy black, the bill of the male, a bright yellow, and the edges of the eye-lids a similar colour. The plumage of the female is not of so intense a black as the male; nor is the bill of so bright a yellow: the difference in the colour of the bills being the principal characteristic of their sex. There are three other varieties of this bird, but they are not common in England.

It inhabits Europe and Asia; frequents hedges and thickets, and lays four or five dirty-green spotted eggs. It has a loud and beautiful note; sings in England in the spring, and early part of the summer, for about three months; not often at any other period of the year in a domestic state.

BLACK CANKER, in agriculture, a name given to a caterpillar which commits great devastation among turnips. The best method of destroying these insects, is to turn a body of ducks into the fields infested with them: fifty ducks would be sufficient for four acres.

BLACK CATTLE, among graziers, denotes bulls, oxen, cows, heifers, and their offspring. They will be treated of under their respective heads. These animals are sometimes called also **NEAT CATTLE**.

Black click. See **BEEBLE**.

BLACK FLY, an insect that attacks the seed-leaf of turnips, cabbages, and many other vegetables. See **TURNIP**.

BLACK, IVORY. See **IVORY BLACK**.

BLACK LEAD, called also *Plumbago*, and by late chemists *carburet of Iron*, is found in various parts of the world, but most abundantly at Borrowdale in Cumberland, whence Great Britain, as well as the greater part of Europe, are supplied with this article.

Pure black lead is of a blackish grey colour; when newly cut, it presents a blueish white cast, and shines like com-

man lead. Its goodness may be known by taking the powder and rubbing it between the finger and thumb: if it leave a smooth polish, which adheres to the skin, it is good: if it produce little or no polish, or fall from the fingers easily after it is rubbed, it is not good. It is found in loose pieces from an ounce to a pound or more in weight.

It is used in the making of pencils, in covering the surface of iron utensils, particularly stove grates, to preserve them from rust and give them a neat appearance, and also in the composition of crucibles, called black-lead pots. The black-lead powder sold in the shops is often adulterated with the latter articles.

Its specific gravity varies from 1.987 to 2.267. It suffers no change, even by the most violent heat in close vessels; neither does it melt; but if it be roasted with a strong and continued heat, and air be admitted, the greatest part of it disappears, leaving behind a small portion of oxide of iron.

BLACK LEGS, a disease incident to young cattle. See **QUARTER EVIL**.

BLACK OILS. A mixture of oils used in farriery of a very stimulating nature: they are used externally to reduce obstinate swellings of the joints, &c., and are prepared as follows: take of oil of elder, (or olive oil) and of oil of turpentine, each eight fluidounces; of oil of origanum, of rectified oil of amber, and of oil of vitriol each half an ounce. Mix all together, except the oil of vitriol, which must be added afterwards very gradually to the mixed oils.

A still commoner kind may be prepared thus: take of linseed oil eight fluidounces; olive oil and oil of turpentine, of each four fluidounces; common oil of amber and oil of vitriol, of each half an ounce. Mix as before.

BLACK WADD, a kind of ore of manganese, remarkable for its property of taking fire when mixed with linseed oil in certain proportion. It is found in Derbyshire, and is used as a drying ingredient in paints; but when ground with a large quantity of oily matter it loses this property.

BLACKING is a term sometimes used for a fictitious black, as lamp-black, shoe-black, &c.

The best blacking for preserving the leather of shoes, boots, &c., and which will make it perfectly water tight, is the following: take of yellow wax one ounce and a half; of mutton suet four ounces and a half; horse turpentine half an ounce; ivory black three ounces. Melt first the wax, to which add the suet, and afterwards the horse turpentine; when the whole is melted remove it from the fire, and mix in gradually the ivory black, constantly stirring till it is cold. This composition is sometimes run into moulds, and sold under the name of **BLACKING BALLS**. When it is used it may be laid, or rubbed upon a brush, which should be warmed before the fire. It is also the best blacking for every kind of harness. When it is wanted to be used in large quantity it may be gently melted in a ladle or pot, over a chaffing dish with live coals.

Fashion has discarded the above mixture, as blacking, from polite society, on account of its smell and comparative want of polish. It is ill supplied by the following, which have little else but their polish to recommend them; indeed, we fear that they are mischievous to the leather, in exact proportion as they are valuable as a polish; where polish only is desired, they are of course to be preferred.

Bayley's Blacking. Take one part of the gummy juice that issues in the months of June, July, and August, from the shrub called goats-thorn; four parts of river water; two parts of neat's foot oil, or some other softening lubricating oil; two parts of superfine ivory black; two parts of deep blue prepared from iron and copper; and four parts of brown sugar candy. Evaporate the water; and when the composition is of a proper consistence, let it be formed into cakes of such a size that each cake may make a pint of liquid blacking.

Liquid Blacking. Take of ivory black and treacle, of each three ounces; of olive oil and gum arabic, of each two drachms; of stale beer ten ounces; of

BLADDER

vinegar two ounces ; of oil of vitriol two drachms ; mix the whole together.

BLADDER, URINARY, is situated in the cavity of the plevia in men, between the pubes and the rectum ; and in women between the pubes and uterus. Its form is oval, it is almost uniformly surrounded with bones, though below and at each side accompanied with muscles. It is remarkable that this vessel is considerably larger in the female than in the male sex.

The urine passes through the uterus from the kidneys to the bladder, where it is detained for a certain time and then expelled.

The human bladder possesses a high degree of expansion, by which it is enabled to contain the watery parts secreted from the chyle. Although a large proportion of such aqueous humours are insensibly evacuated by the skin and lungs, yet a large quantity is also secreted by the kidneys, and thence conducted to the bladder : for were not this the case, they would accumulate between the intestines of the cellular membrane, which covers all the muscles, and occasion dropsical swellings.

The diseases incident to the bladder are various, but principally arise from debility, spasms, and calculous concretions ; for an account of which we refer to the articles GRAVEL, STONE, and URINE : we shall only treat of the following here.

Inflammation of the bladder. This dangerous disease may be produced by stimulating medicines ; by the rubbing, or pressure of a stone, or gravel ; by strictures in the urethra ; or by violent exercise after a long retention of urine, especially in hot weather. The inflammation begins by a violent pain in the region of the bladder, (i. e.) in the *perinæum*, or in the belly immediately above the pubis, deep-seated, and sometimes attended with a redness of the parts. There is generally a retention of urine, or a continual dribbling, with a constant desire for its evacuation ; and a frequent inclination to go to stool. The pulse is frequent and hard ; the extremities become cold, with immense

anxiety and restlessness, sickness, vomiting, and delirium with fever. The patient is, for the most part, cut off in a short time. Sometimes, however, where the disease is not so violent, it proceeds to suppuration : this is attended either with a difficulty of making water, or a total retention of it. In this case, the matter may make its way into the bladder, and come away with the urine, leaving an ulcer there. Ulcers in the bladder and perinæum are of difficult cure.

In this disease, no one who is not well skilled in medicine should venture to give directions, except previously to the arrival of a medical man. Besides bleeding and purging, the patient should drink plentifully of emollient decoctions, such as barley-water, or linseed-tea, or other beverage of a cooling and diuretic nature. Leeches may be applied to the part affected ; the lower belly should be diligently fomented with warm water, or with a decoction made of camomile flowers, the leaves of rue, poppy heads, and marsh mallow root, all well bruised ; one ounce of each will be sufficient : they may be boiled in three pints of water for a few minutes, and after the part has been fomented with the liquid, the herbs, &c. may be laid on the part as a poultice, to remain as long as it continues warm. The patient may also be placed in a warm bath, not exceeding 98 degrees.

In some cases it is necessary to evacuate the urine by art to avoid gangrene and mortification, but this must be done with extreme caution.

When this disease arises from the internal use of cartharides, camphor is recommended, besides other cooling medicines, and particularly cooling and emollient clysters.

The sudden abatement of the pain, succeeded by cold sweats, hiccough, fœtid urine, or a total suppression of it, indicate mortification, and a fatal issue of the disease.

INFLAMMATION OF THE BLADDER IN HORSES, OR CATTLE, does not often occur. When it does, it most commonly depends either on inflammation

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having spread to it from the bowels, or other internal parts, or from the too free use of strong diuretics. Frequent staling is a symptom of this disease, although only a few drops are voided at a time: and from this symptom it has been supposed, that there is a stoppage in the neck of the bladder, or in the urinary passage, but it will be found on passing the hand up the rectum, that the bladder is empty. Frequent staling, however, it must not be forgotten, is also an attendant on inflammation of the kidneys. See KIDNEYS.

Bleeding is the first remedy to be employed; if the pulse be very quick, the inner surface of the eye-lid red, and the breathing disturbed, not less than five or six quarts of blood should be taken away, provided the animal does not faint before this quantity is lost. Unless the bowels are in an open state a pint of castor oil should be given; and any hard excrement there may be in the lower intestines, may be removed by glysters. If the symptoms do not abate, an anodyne GLYSTER (see that article) must be thrown up, and the following ball given once in six hours: take of camphor one drachm and a half; opium half a drachm; linseed meal and treacle enough to form a ball. The horse should be allowed, or made to drink freely of linseed infusion, or a solution of gum Arabic. If relief should not be obtained by these means, and the symptoms of inflammation continue, particularly if the blood first drawn have the buff on its surface, the bleeding must be repeated, as it is the only chance of saving the horse's life.

Horses are sometimes affected with *Irritability of the bladder*, which causes them to stale much oftener than usual, but not with any pain, nor in very small quantity; at such times they feed well and are free from fever. The pernicious practice of giving strong diuretics upon every trivial occasion, most probably gives rise to this disease. The best remedy is the infusion of linseed; or, if this does not remove it, give the following ball: camphor one drachm and a half; opium half a drachm;

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nitre six drachms; flour and syrup enough to form a ball.

BLADDER-NUT-TREE, or *Staphylea*, a genus of which there are three species, the *trifolia*, the *occidentalis*, and the *pinnata*, or Five-leaved bladder nut, a tall shrub, or tree, often found wild in our hedges with white flowers.

BLADDER-SENNA, *Colutea*, a genus of plants of which there are thirteen species, chiefly natives of the Cape of Good Hope, but a few indigenous to Germany and the Levant. Six are deciduous shrubs, the rest herbaceous. They are for the most part furnished with many-coted leaflets, and beautiful papilionaceous flowers, either yellow or red. They may be propagated by seeds and layers.

BLADDER-SENNA, *joint-podded*, or Scorpion Senna, *Coronilla emerus*, is common in our gardens, and easily propagated by seeds, layers, or cuttings. The seeds should be sown in March, in a bed of light earth; the layers of the young shoots should be laid down in autumn, or winter, with a gentle twist; the cuttings of the young should be planted in the spring or autumn, in shady borders, and should be removed when well rooted.

There are, in all, twenty-five species of the genus *Coronilla*, chiefly natives of India, the West Indies, South America, or the south of Europe. The *juncea* a native of the south of France; the *securidaca* a native of Spain; and the *argentea* a native of Crete, are most worthy of notice.

BLADE of the **SHOULDER**, called by anatomists, *Scapula*, is nearly of a triangular figure, and fixed, not unlike a buckler, to the upper, posterior, and lateral part of the thorax, extending from the first to about the seventh rib. The scapula is articulated to the clavicle, and humerus, and arm bone, to which last it serves as a fulcrum; and by altering its position, it affords a greater scope to the bones of the arm in their different motions. It likewise affords attachment to a greater number of muscles, and serves also as a defence to the thorax behind.

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BLAIN, a term used in old books, treating of the diseases of cattle, and said to be a watery tumour growing at the root of the tongue, which threatens suffocation; it is first perceived by the beast's gaping, holding out his tongue, and foaming at the mouth. To cure it the animal should be thrown down, the tongue drawn forth, and the tumour be opened with a knife; it is afterwards to be washed with vinegar and salt, leaving the rest to nature. We have not, however, seen a disease which corresponds with this description, either in horses or cattle.

BLAME, in morals, means not only the imputation of a fault, but a state deserving censure. In this last sense it is opposed to praise; to one or other of these states all moral actions are supposed to belong. There seems to be a mischievous propensity in the human mind, at least as society is at present constituted, to magnify the faults of others, and to gloss over our own. This disposition to blame requires constant counteraction; the more we become acquainted with the causes and motives which actuate others, the less shall we be disposed to censoriousness: there are many things in thought as well as in action, which appear wrong, yet have sound principles to support them when understood. But where even an object might be obnoxious to blame, let it never be forgotten, that it is our duty to distinguish between the action and the individual, the action can never be retrieved, and may be inherently bad, but the individual may amend. All our benevolence and charity are demanded for his assistance in so doing. See **PRaise**.

BLANCHING, the art or manner of rendering any thing white. See **BLEACHING**.

Almonds are blanched by pouring boiling water on them: the skins immediately thicken, and are then easily taken off. Chesnuts, and many other kernels, may be blanched in the same manner.

BLANCHING, among gardeners, an operation whereby certain salad roots,

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&c. are rendered whiter than they otherwise would be, and in some instances more crisp and edible. It is thus: after pruning off the tops and roots of the plants to be blanched, they are to be planted in trenches about ten inches wide, and as many deep, more or less, as is judged necessary. As they grow up care is to be taken to cover them with earth, within four or five inches of the tops: this is to be repeated from time to time during the growth of the plants, or at least five or six weeks, in which time they will be of a whitish colour, where covered by the earth, and fit for use. Lettuces, and some other plants, are blanched by having their outside leaves simply tied over the tops.

BLANKET, a well known article belonging to a bed. The best kind is made at Witney in Oxfordshire. Its excellence for warmth arises from wool being a bad conductor of heat. It is of importance to health that blankets in constant use should be occasionally washed. They receive and retain animal effluvia with some pertinacity. At all events they should never be used again after being removed from a sick bed, under any circumstances, until they have been thoroughly washed and purified.

BLAST, in agriculture and gardening, is synonymous with **BLIGHT**, which see.

BLEACHING is the art of whitening animal and vegetable substances, by discharging from them their colouring matter.

The immediate nature of the colouring matter, whether of animals or vegetables, does not appear to have been very satisfactorily ascertained, even at the present day. Yet the colouring matter of the former is well known to be essentially different from that of the latter; and on this account, in modern times, is attacked by a somewhat different series of operations.

The linen as it comes from the loom is charged with what is called the weaver's dressing, which is a paste of flour boiled with water. To discharge this paste the linen must be steeped in water

BLEACHING

for about forty-eight hours, when this extraneous substance undergoes a kind of fermentation, which does not extend to the linen itself. The linen being well washed after this fermentation, contains nothing that water can separate.

In this state the cloth is committed to the bleacher, and the process of whitening commences.

Under what is called the old system, Bleaching consists of the following operations:

Steeping and milling. Steeping is made use of for cleansing the cloths designed to be bleached, and is effected by either plain water, equal parts of ley and water, or rye-meal or bran mixed with water. The liquids are used blood warm. After steeping, the cloth is carried to the put-stock-mill to be freed from all its loose foulness.

Bucking and boiling. This is the most important part of the whole process: it consists in boiling the cloths in caustic alkaline ley, by a heat gradually raised, and thereby dissolving and taking off the colouring matter. Boiling, in the bleaching of linen cloth, is only used when the goods are nearly white, with pearl ashes alone, or with pearl ashes along with soap towards the end of the whitening process.

Alternate watering and drying. After the cloth has been bucked it is carried out to the field, and frequently watered for the first six hours: for if, during that time when it is strongly impregnated with salt, it be allowed to dry, the salt, in conjunction with other circumstances, will destroy its texture. After this time, however, dry spots are allowed to appear before it gets any water. In this state it profits most.

Souring or acidifying. Frequent buckings and bleaching load the cloth with earthy, or alkaline neutral salts, which nothing but acids can remove. The acid liquors commonly used are butter-milk, which is reckoned the best, sour milk, infusion of bran, rye-meal, &c. kept for some days until they turn sour. The linen ought to be dried before it is put in the sour. Diluted sulphuric acid is sometimes employed

instead of the acids above mentioned. The sours are used strongest at first, and gradually weakened till the cloth has attained its whiteness.

Soaping and hand-rubbing. After the cloth comes from the souring it should be well washed in the washing mill. From this mill the fine cloth is carried to be rubbed with women's hands, by soft soap and warm water. Coarse cloths are laid on a table run over with soap, and put between rubbing boards, which have ridges and grooves. These boards are either moved by hand or by a water wheel. The cloth is either drawn by degrees through them by men, or by an apparatus.

Starching and blueing. The last operation is too simple to need a particular detail; it is conducted in the common mode to which laundry-women are accustomed.

The same processes, with modifications, are applicable to cotton, silk, wool, &c.

Such, till of late years, was the usual method of bleaching linen cloths, without any essential variation; but, it being supposed that oxygen gas was the principal agent in bleaching, to hasten this process by a more manageable and concentrated application of oxygen, has been the united efforts of modern chemistry.

The discovery of the oxygenated muriatic acid, now called *chlorine*, has accomplished almost every desideratum, and opened a mode of practice which has superseded almost every other. After repeated trials, it has been discovered, that this acid can be combined with the alkaline earths, as lime and barytes, and also with magnesia, by these means forming oxymuriates which are soluble in water, and have the property of bleaching. The oxymuriate of lime is at present used in almost all the bleaching grounds in the united kingdom.

Upon the use of this agent, chlorine, therefore does the expedition and whiteness of modern bleaching principally depend. We cannot, however, avoid observing, that although we think with care, a good chemist can always apply

this powerful assistant in the art of bleaching to advantage, yet it is in too many instances, and in the hands of bungling and avaricious persons, an agent which will very much contribute to the destruction of the cloth. It cannot be denied, that there is still a demand for cloths bleached after the old method.

BLEAK, *Cyprinus alburnus*, a species of carp. It inhabits, in shoals, the fresh waters of Europe and the Caspian sea; from four to ten inches long; the flesh white and good.

There is a variety called white bait, found in the Thames in vast shoals, in the month of June, about two inches long.

BLEEDING, a term used to express either an artificial, or spontaneous discharge of blood. In the former case, it is termed by medical writers, *venæsection*. (See **BLOOD LETTING**.) In the latter **HÆMORRHAGE**, which see. *See also the next article.*

BLEEDING AT THE NOSE. This complaint may be met with at every period of life; but the changes which take place in the system just before puberty, and after the age of forty and fifty, render it more likely that the effusion should take place at these periods.

During the existence of febrile, or inflammatory complaints, in which the head is much affected, bleeding from the nose sometimes happens, and in general proves critical, being followed by the removal of the prior disease; it should not, therefore, under such circumstances, be checked, unless it become profuse.

Bleedings from the nose in young persons, are seldom considerable in quantity, generally ceasing spontaneously after a moderate flow, or yielding to the application of cold water to the surrounding parts, or to the application of any very cold substance, (a large iron key for instance) to any part of the surface of the body.

From attentive observation, it appears that in those young persons who are subject to a bleeding of the nose, there exists not only a general fulness

of blood, but also an increased determination of blood towards the head. This is a state which certainly demands attention. Perhaps, in the absence of medical advice, a smart dose of Epsom salts as a purge, may be found in such instance most beneficial.

When this disease happens to those who are advanced in years, it often prevents an attack of palsy, or apoplexy; and there cannot exist a doubt that the discharge should not be checked on its first appearance: on the contrary, it will be frequently necessary to have recourse to bleeding to relieve the head.

When, however, the bleeding is so profuse that the pulse becomes weak, and the face pale, every means must be used to put a stop to it, and that whether the patient be young or old. Cloths dipped in cold water, vinegar, spirits of wine, or brandy, may be frequently applied to the nose and face; the body should be kept in an erect posture, and exposed to the free access of cold air. If these should not prove sufficient, a piece of lint rolled up in the form of a cone, must be introduced into the nostrils: no benefit can, however, be expected from this, unless applied with sufficient force to press on the orifice of the ruptured vessel. If these should not succeed, the lint may, previously to its introduction into the nostril, be enveloped in flour; if this fail, the lint may be again introduced with the addition to the flour, of a fourth part of finely-powdered alum, white vitriol, or green copperas. It is almost unnecessary to add, that every thing likely to stimulate the nostrils, so as to produce sneezing, must be carefully avoided.

Ligatures to any of the limbs in this complaint, although formerly recommended by some respectable Physicians, are now known to be injurious.

BLEEDING, OR BLOOD-LETTING OF HORSES. The most important operation in farriery, not on account of its difficulty, but because it is by far the most efficacious remedy in many dangerous diseases to which horses and cat-

tle are liable, and because considerable discrimination is necessary, to know in what diseases it ought to be adopted. It is generally admitted by veterinarians, in all cases where general bleeding is required, that the neck vein is the most convenient; as any quantity of blood may be drawn from it with greater certainty, and much less difficulty, than from any other. The diseases in which bleeding is useful, will be mentioned elsewhere.

The practice of bleeding horses indiscriminately at certain periods, is highly improper; but if they have been accustomed to such periodical evacuation, they often suffer from its omission.

When a horse has been bruised considerably by a fall, a kick, or otherwise, it is proper to bleed rather freely, and keep him on a cooling diet. If a horse has been over ridden, as sometimes happens in a severe chase, copious bleeding, if immediately employed, promises the most likely means of relief.

The quantity of blood which should be drawn from a horse at once, is, of course, exceedingly variable, depending upon the disease with which he is afflicted. Five pints are esteemed a moderate quantity, and five or six quarts a large quantity; but two or three quarts are in general sufficient.

BLEYME, an inflammation in a horse's foot, from extravasated blood, or other inaccordant matter. It often exhibits the appearance of a corn, with a bottom of sanious pus. The cure consists in paring the hoof, or foot, deep enough to extirpate the confined substance, whether a stone, extravasated blood, or any other matter. The sore will heal with digestive ointment, or balsam, and a bar-shoe must be employed till the frog be sufficiently covered with new heel.

BLIGHT, in husbandry, a disease incident to plants, and even trees, affecting them in various ways, sometimes destroying only the leaves and blossoms, and sometimes causing the whole plant to perish.

Blights are generally supposed to be produced by easterly winds conveying

multitudes of the eggs of insects from some distant quarter; but we think this notion is very erroneous, nor do we think that the remedy of burning a quantity of wet litter near the plants or trees, so that the wind may carry the smoke over and about them, is at all likely to answer the desired end. If, indeed, a very dense and noxious smoke, such as that of burning tobacco for instance, could be applied to the living insect, it would be destroyed; but as the smoke is, or can be, generally applied, it is so diluted as to be useless: of this fact we have often had ample evidence, even with attenuated tobacco smoke itself.

The early blossoms of apple, and many other trees, are frequently destroyed by an excess of cold; and the haziness of the air, which usually accompanies warm days, and frosty nights, with a north-east wind in the spring, is injurious to the blossoms of every tree, and particularly so to the apple: for the warmth of the day hatches the eggs of the insect which breeds it, whilst the coldness of the night by checking the progress of the sap, retains the blossom in its half expanding state, so as to form a nidus for it. This insect, which assumes the winged state in July, is a small brown beetle; and it most probably lays those eggs on the trees which, if the succeeding season be unfavourable, prove destructive of the future crop of fruit. This is to us a much more rational account of blights of this kind. We have no doubt that upon a careful examination of the branches of fruit-trees, during the winter season, and more especially just before the buds come forth in the early spring, that the eggs of these insects may be found and destroyed: the trouble of looking over a large quantity of trees is immense, but we cannot conceive any other means effectual. We are led to this conclusion, because we know that the species of *aphis*, which infests the rose in such quantities, can be destroyed in myriads, by looking carefully over the branches during the winter and spring. The eggs of this insect will be found attached to the branches of the rose, and

covered over with a dark brown skin, like a knot, which appears to a careless observer as part of the branch itself.

It is said, but we very much doubt the fact, that the environs of London are particularly subject to blights, and that this arises from the great number of pruned trees and hedges near the metropolis. There is no truth whatever in the assertion, that blights on fruit-trees are unknown one hundred miles westward of London.

BLIGHT, AMERICAN. A disease which has lately infested apple, and other trees in various parts of England. We have seen it upon the fir, to whose leaves it attaches something like a hoar frost. It is produced by an insect called by some the American bug, or white blight. An easy remedy for this has been discovered. It is only necessary to clean the diseased parts, and to apply to them common fish oil, such as is used in coarse out-door work, with a brush, and the nuisance may be got rid of without injury to the plants. *Fish oil* is preferable to linseed oil, on account of its stench, which is highly injurious to insects. Olive oil is also injurious to them, and promotes the health of the tree. It is said, that water applied with a hand brush will answer the purpose. The following liquid is the most effectual of any: take two ounces of quicksilver, and the same quantity of common salt; let these two substances be mixed together, so as to kill the quicksilver, by stirring them about with a stick, six or seven inches long: the hand not to touch the mixture on any account. When they are well incorporated, which is generally in about five minutes, add four ounces of rape oil, and two table spoonfuls of spirit of turpentine, stir them well together. This liquid is to be applied with a feather, and it will be found an infallible means of destroying every species of vermin in houses, hot-houses, gardens, or orchards.

Blighted Corn. See **SMUT**.

BLINDNESS, a want of sight. The causes of blindness are various: such as a weakness or decay of the optic nerves,

preternatural conformation of the organs, external violence, malignant effluvia, poisonous liquids dropped into the eye, too frequent exposure to intense heat or light, long confinement in dark places, &c.

Persons who are born blind, or lose their sight in infancy, seldom recover that important faculty. It has, however, been uniformly observed, that the privation of one sense, renders the others more acute and useful. Hence, blind persons generally hear better, and possess a more delicate sense of touch, than those who enjoy all their sensitive faculties; and we have also so many instances of the poetical, and philosophical talents displayed by the former. See **CATARACT**, **GUTTA SERENA**, and **LIGHT**.

The education of the blind not only deserves, but receives public sympathy: asylums are now established, where the useful art of basket-making in particular, is learnt and exercised by the blind to a surprising degree of perfection. Besides affording the pupils instruction gratis, these asylums allow them a weekly sum, proportioned to the nature of their work, and the proficiency made by them, thereby relieving them in some degree, at least, from the painful idea of absolute dependence on the bounty of others; and, which is of scarcely less importance, affording them an active employment, which would be otherwise spent in despondency and gloom.

That the blind, when favoured with proper degrees of cultivation, may attain considerable eminence, not only in the mechanical, but in the liberal arts, has been incontestably proved.

We rejoice in the consideration, that many institutions have been established in different parts of Europe, for the instruction and support of the indigent blind. Those of our own country, at Liverpool, Bristol, Edinburgh, and London, prove clearly that, as in others, so neither in this species of benevolence, will Britons be inferior to any of their European neighbours.

The health of blind persons is, of course, best preserved by temperance; but we do not know that, in other re-

spects; they require different treatment from those who can see, but whose occupation are, as those of the blind must for the most part of necessity be, sedentary.

BLINDNESS OF HORSES may be discovered by the walk or step, which in a blind horse is always uncertain and unequal; he does not set down his feet boldly when led in the hand, although if the same horse be mounted by an expert horseman, and the horse himself have mettle, the fear of the spur will make him go more freely, so that his blindness can scarcely be perceived; a blind horse upon hearing any body enter the stable will also prick up his ears, and move them backwards and forwards as mistrusting every thing, and being in continual alarm at the least noise.

Grey horses, and those of the black cart breed, have more frequently bad eyes than horses of other colours. But all young horses, of whatever breed or colour, if pent up in hot close stables, fed high, and not sufficiently exercised, are liable to inflammation of the eyes, and when once this disease has occurred there is great danger of its terminating sooner or later, either in partial or total blindness. See **EYES of Horses**.

From the peculiar structure of the eye of the horse, the operation either of couching, or extracting the cataract, must be useless: for though light can pass to the retina, after such operation the vision would be so confused and imperfect as to render the horse more dangerous to ride than one totally blind.

In gutta serena, or a loss of power in the optic nerve, there is scarcely any chance of cure.

Horses sometimes startle at meeting any object unexpectedly in their road that are not vicious in other respects: this may often arise from a defective sight, for which we do not believe there is any cure. Such horses which may be otherwise valuable should be always used with their eyes totally covered, to prevent any mischief by their sudden starting. Beating them for such a fault is both useless and cruel.

BLIND - WORM, or slow-worm, *Anguis fragilis*, is about a foot in length, and about the thickness of the little finger. Inhabits Europe and Siberia in hollow ways, woods, paths, and among rubbish; breaks, if thrown down, into pieces, and the fragments will live a long time afterwards. The back a yellowish ash colour; belly black; sides streaked with black and white. It is occasionally seen in England: the bite of this animal is said to be perfectly harmless.

BLISTER, in medicine, a thin bladder containing a watery humour, whether occasioned by burns, and the like accidents, or by direct application of some acrid substance to different parts of the body; such as cantharides, mustard seed bruised, the fresh root of horse-radish grated, the bruised leaves of the different species of the ranunculus or crow foot, the leaves of water pepper, the *Daphne Mezereum*, every part of which is extremely acrid, &c. Cantharides are, however, the principal ingredient in blisters, (see the next article.) Sometimes, however, mustard poultices, made into a paste with vinegar, are of service; as is also the bark of the daphne mezereum, applied to the affected part.

Blisters are occasionally of service in a variety of diseases, but we think that they have been too often thought more of than their actual use and importance in medicine can warrant. One of the most decided cases in which blisters have been of service is, in the cough, pain of the thorax, and anxiety, which frequently takes place after the inflammatory stage of the measles has subsided. A blister applied to the sternum has often in this case afforded considerable relief.

Blisters may be healed by the wax plaster, or spermaceti cerate: the latter is to be preferred, if no discharge is desired to be kept up.

Blisters, however, should at all times be resorted to with caution. Those composed of cantharides particularly, increase the circulation of the blood, and, therefore, in persons of a plethoric habit ought to be applied only after

the necessary evacuations have been attended to.

BLISTER, PERPETUAL. It is sometimes desirable to keep open blistered surfaces after the operation of the immediate blister. This may be done very conveniently by either of the following ointments.

Blistering fly ointment. Take of Spanish flies finely powdered one ounce; water eight ounces; resin cerate four ounces: boil the water with the Spanish flies to half its quantity and strain. Mix the cerate into the strained liquor, and boil it to a proper consistence, that is, till all the water be evaporated.

Savine Cerate. Take of fresh leaves of savine bruised four ounces; of yellow wax two ounces; of hog's-lard eight ounces. Having melted the wax and lard, boil therein the savine leaves until they become crisp, then strain through a linen cloth. It ought to be a beautiful deep green colour, and to smell of the fresh bruised herb. It should also be kept close from the air.

Savine cerate has been lately introduced into medical practice for keeping up a discharge from blistered surfaces, which it does as effectually, and with less irritation than the ointment of blistering flies. A white crust is apt to form on the discharging surface, which should be occasionally removed, so as to allow the cerate to be applied to the sore.

BLISTER PLASTER may be made of cantharides in the following manner: take of yellow wax three ounces and a half; of yellow resin and Burgundy pitch each two ounces; horse turpentine five ounces; Spanish flies four ounces. Melt first the resin, next the wax, then the Burgundy pitch, to which add the horse turpentine; and when removed from the fire, and not too hot, sprinkle in the Spanish flies: stir the whole till cold. Blister Plasters should be spread upon leather, if possible, without using any heat; and it is desirable to place round the margin of them an edging of wax plaster, or other adhesive substance, the better to insure their sticking; they should also

be covered with warm flannels to promote their rising.

BLISTERS FOR HORSES. There are three different forms in which blisters are used for these animals. *Mild blistering ointment* is composed of four ounces of hog's-lard, and one ounce of yellow wax melted together, to which must be added one ounce of oil of turpentine, or of oil of origanum, and six drachms of powdered cantharides. *A strong blistering ointment* is made thus: oil of turpentine two ounces; sulphuric acid, by weight, six drachms; hog's-lard twelve ounces powdered; cantharides two ounces. The first two ingredients are to be carefully mixed in the open air, in a large stone pot, to allow room for their effervescence. When the effervescence has ceased, add the hog's-lard previously melted, and lastly, when the mixture is become somewhat cool, add the cantharides. *Blistering liniment* is made thus: olive oil two fluidounces; oil of turpentine half a fluidounce; water of pure ammonia two fluidrachms; powdered cantharides two drachms. Mix a *Liquid Blister* thus: one ounce of powdered cantharides; spirit of wine eight ounces; water of pure ammonia two ounces. Let them stand together for a week, frequently shaking the bottle, then pour off the clear fluid. This may be made much stronger by dissolving in it from half a drachm to a drachm of corrosive sublimate.

The ointment is generally preferred, but the liquid blister is considered by some the best application for curbs, spavins, and splents. The part to be blistered should have the hair cut off as completely as possible, and after the application has been well rubbed in, the horse must be prevented from biting or rubbing the part, which will sometimes cause a serious blemish.

BLITE, or *Blitum*, a genus of plants of which there are two species, both natives of Europe. The *virginianum* is a beautiful plant in our green-houses, with heads of flowers produced the whole length of the stalk.

BLITE, small red, or *Amaranthus*

BLOOD

blitum, the only *Amaranth* indigenous to this country. It flowers in July and August. On the continent its seed is used as a substitute for millet, and the leaves are dressed and eaten like spinach.

BLOOD, a red fluid of a saltish taste, and somewhat urinous smell and glutinous consistence, which circulates in the cavities of the heart, arteries, and veins of almost all animals, and conveying heat and nutrition to the whole body.

The quantity of blood in the human body is estimated to be about twenty-eight pounds in an adult : of this four parts are contained in the veins, and a fifth in the arteries. The colour of the blood is red ; in the arteries it is of a florid hue, in the veins darker ; except only in the pulmonary veins, in which it is of a lighter cast. It has been demonstrated that it acquires the florid colour in passing through the lungs ; and it is supposed that this is produced by the absorption of oxygen from the atmospheric air with which the blood is brought in contact during its passage through these important organs : hence the necessity of air for the immediate support of life. The blood, therefore, is the most important fluid of the human body. Some philosophers have considered it as alive, and have formed many curious hypotheses in support of its vitality. The celebrated JOHN HUNTER was one of these, and he is supposed, by some, to have established the position beyond a doubt. However, certain it is that blood preserves life in the different parts of the human body : for when the nerves going to a part are tied or cut, the part becomes paralytic, and loses all power of motion, yet it does not mortify ; but if an artery be cut, the part to which it supplies blood dies, and mortification ensues.

The discovery of the circulation of the BLOOD was made by Dr. HARVEY, who first ascertained the true nature and uses of the valves, and about the year 1616 taught in his lectures at Cambridge that justly-admired doctrine, the substance of which he published in 1628. He proved that in most animals the blood circulates in arteries

and veins, and through the medium of one, two, or more hearts ; that in the arteries it moves from the trunk to the branches, and that, meeting there with the branches of the veins it returns in a languid state to the heart ; that the heart communicates a new impulse, and propels it to the trunk of the arteries ; and that there, the thickness of their coats exerting muscular force, again drive it into the veins. Valves are situated in various parts of the circulating course in order to prevent the return of the blood.

When blood is drawn from its vessels in the living animal it soon concretes into a jelly-like mass, which afterwards gradually separates into a fluid serum of a pale straw colour, and a coagulated *crassamentum* or *cruor*, which is red. The cause of this coagulation is quite unknown. The specific gravity of blood varies in different subjects from 1.050 to 1.070 : but the cause of this variation is also unknown.

The serum of the blood possesses the same properties as the white of an egg, hence it has been called albumen. When the *coagulum* or *cruor* of the blood is carefully washed under a small stream of water, the colouring matter is gradually dissolved and washed out, and a white fibrous substance remains which has been termed *fibrina*, or coagulable lymph, but of which the chemical properties are those of albumen. The colour of the blood has generally been referred to small globules of a red colour, which, by the aid of a microscope, may be discerned in it ; and it was supposed that these globules were soluble in water ; but more accurate experiments prove that water dissolves the colouring matter only, leaving the globules, which in this state have the properties of albumen, perfectly colourless.

The colouring matter of the blood can scarcely be obtained free from other substances. The chemical properties of this matter show that it is a peculiar animal principle. Iron is found to be an ingredient in it, in the proportion of about seventy scruples in twenty-eight pounds ; and hence by many, iron is

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supposed to be the cause of the red colour of the blood; but Mr. Brande, and other respectable authorities, think that this colour is perfectly independent of iron, and consequently the cause of the red colour of the blood yet remains to be explained.

It sometimes happens, when the blood is long in coagulating, as in certain inflammatory diseases, that a portion of the *coagulable lymph* is left without the colouring matter, forming what is called the *buffy coat of blood*; in this case it is so tough as to admit of being removed from the coloured portion, and when dried, shrinks up, and appears exactly like horn.

Experiments on the blood in different diseases have thrown no light whatever on their nature, nor have any material difference been found in the blood of the same animal at different periods, or in that of different animals of the same class.

The temperature of the blood is of considerable importance, and appears to depend upon the circulation and respiration. The blood of man, quadrupeds, and birds, is hotter than the medium which they inhabit; hence they are termed warm-blooded animals; whilst in fishes, and amphibious animals, insects, and worms, it is below the temperature of the atmosphere; and hence they are denominated cold-blooded animals.

From what has been said, the utility and importance of the blood may be known: it distends the cavities of the heart and blood-vessels; it stimulates to contraction, the cavities of the heart and vessels, by which means its circulation is performed; it generates within itself animal heat, which propagate throughout the body, the whole of which it nourishes; and lastly, it is the source from which every secretion of the body is separated. See ANATOMY, ARTERY, LUNGS, HEART, &c

Blood has been occasionally used as food: but although it, undoubtedly, possesses nutrition, there is something revolting in its use.

Animal blood was formerly held in

great esteem as a medicine. At present the principal use of blood is confined to the arts;—for making Prussian blue; sometimes for clarifying certain liquors; and very large quantities are used in the refining of sugar; in the two last uses, it is the albumen only of the blood which operates as a clarifier.

In horticulture, blood is recommended as an excellent manure, when poured in spring on the roots of trees, the soil round the trunk being previously removed.

A mixture of blood and quicklime, forms an exceedingly strong cement, and has therefore been used in preparing chemical lutes, as well as in making floors of common farm-houses, and other humble habitations: a mixture of clay, ox-blood, and a moderate portion of sharp sand, well beaten together, and uniformly spread, produce a neat firm floor, and of a beautiful colour. Dried ox-blood will keep for years without undergoing any alteration, nor does it absorb moisture from the air.

BLOOD, in veterinary science, denotes a particular breed of the horse, used for its speed: for blood horses in their natural properties are, indubitably, superior to all others. This superiority is not confined to internal or invisible causes only, but arises, in a great measure, from the external conformation of their bodies, consisting in the great length of their quarters, and the depth and cavity of their chest; and a compactness of fibre, which may be traced in every part: namely, skin, muscle, tendon, ligament, bone, and hoof. It is this last property which increases their strength without adding to their bulk; so that, in their relative proportion with ordinary horses, they are not only much stronger, but also can move with greater swiftness.

The true Arabian horse of the first race may be considered as the most perfect model of the species. The blood-horses of Great Britain are descended from this stock.

The blood-horse may be judiciously mixed with other breeds of this animal.

BLOOD-LETTING. Under this

term is comprehended every artificial discharge of blood made with a view to cure, or prevent a disease.

Blood-letting is divided into general and topical, or local. As examples of the former, *venesection*, or *phlebotomy*, and *arteriotomy*, may be mentioned ;— of the latter, the application of leeches, cupping-glasses, and scarification.

It is asserted by a respectable and modern medical writer, that the art of opening a vein, and the necessary cautions respecting the operation, should be learned by every one ; since cases of emergency may happen, where the necessity of its being performed is evident, and where a life may be lost before a surgeon can be obtained. But we cannot cordially agree in this opinion. We are quite willing to admit, that the study of medicine generally, as well as a knowledge of venesection, ought to form a part of the education of every member of society ; and we are, in this work, doing our best endeavours to promote that object ; yet we cannot but consider the process of blood-letting at all times, a most important one : and one too, in the generality of cases, which requires as much discrimination as, if not more than, any other remedial process in medicine. We, therefore, cannot think it prudent, that this important remedial process should be adopted by those who have merely learnt to open a vein, except upon the advice of an experienced practitioner.

There was a period during which blood-letting was in general use, and obtained great credit, as one of the most effectual means of prolonging life, under the impression that, at certain seasons, the vitiated blood was emitted, while that of a more salubrious quality was left behind. But the use of a little common sense has long since exploded this silly doctrine.

Still, however, as a remedy, blood-letting must certainly be allowed, in many cases, to be of considerable importance ; and in others indispensable. It is, sometimes, immediately necessary to produce a diminution of the fulness of the blood-vessels ; and, particularly

so, when the time is too short, and the danger too pressing to admit of any other method being adopted for effecting such purpose.

Blood-letting has generally been had recourse to, with more or less good effect, in many inflammatory complaints attended with fever : in inflammation of the lungs, the intestines, &c. but even in these, its adoption requires considerable discrimination. It has latterly been also much used by Dr. BATEMAN, in the early stages of contagious fevers, for which he asserts it is an active remedy.

Bleeding is also almost indiscriminately had recourse to in hospital practice, when patients are brought in with severe bruises, fractured limbs, &c.

The habit of periodical blood-letting, and that of females being bled during pregnancy, cannot be too much deprecated.

Bleeding, it should be remembered, therefore, can only be of service in some urgent cases, and when performed at the proper time ; but to the healthy, it cannot possibly be advantageous.

Blood-letting of HORSES. See BLEEDING OF HORSES.

BLOOD-SHOT-EYES, an inflammation of the membranes which invest the eye. Rest and exclusion of light, without heating the eye by a close cover, are important in this complaint ; as are cold fomentations, renewed when they become warm, mild aperients, abstinence from animal food, and all heating or stimulating liquors, are also necessary. If these do not remove the disease, leeches may be applied near the eyes ; but cupping, and scarifying near the temples, have been found more effectual.

BLOOD SPAVIN. See SPAVIN.

BLOOD-STONE, or *Hæmatite*, is a red or purple oxide, or ore of iron. It is found in globular and stalactitic masses, having a fibrous, diverging structure. In this country it abounds near Ulverstone in Lancashire, and most of our iron-plate and wire is made from it. Some hard kinds of hæmatite are used for polishing metals.

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BLOOD-VESSELS, in anatomy, are long membranous canals which convey the blood through every part of the body. They consist of two kinds: arteries and veins; *see these articles*.

BLOOD-WORM. *See DOCK.*

BLOODY FLUX. *See DYSENTERY.*

BLOODY URINE IN HORSES. This disease more frequently happens to cattle than to horses: and to the mare than to the horse. It generally arises in horses from bruises, or over exertion; sometimes, however, it arises without any known cause. In recent cases, where it can be traced to a strain or a bruise, bleed freely, give an oily laxative, and rub the loins with some stimulating mixture. When it comes on gradually, or without any apparent cause, if there be no symptoms of inflammation, and the animal appears rather weak than otherwise, give the following powder every morning and evening, for two or three days: Take of catechu half an ounce; of alum one ounce; of cascarilla bark two drachms; let the whole be powdered together, and made into a ball with flour and treacle.

BLOODY URINE IN CATTLE. *See RED WATER.*

BLOSSOM, in general, signifies the flowers of any plants. It is also applied to the flowering of trees in the spring, called also their bloom. The use of the blossom to the vegetable, is partly to protect, and partly to draw nourishment to the embryo fruit, or seed.

BLOW. *See BRUISE.*

BLOWN, or HOVEN, or FOG-SICKNESS IN CATTLE. When cattle are taken from poor keep into a luxuriant pasture, they are apt to take more food into the stomach than it can readily digest; in consequence of this, a quantity of air is generated, by which that important organ is so distended, as to cause the most distressing symptoms; and, unless relief be seasonably afforded, it terminates in a rupture of the stomach, and death. Ginger, with peppermint-water, or other cordials, often remove the disease at its commencement; but when the stomach is so swelled as to threaten suffocation, or a rup-

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ture of it, it is necessary to force down an instrument of sufficient length to reach the first paunch, by which the confined air may escape. Two instruments have been contrived for this purpose, one by Dr. MONRO, the other by Mr. EAGER. The former consists of iron wire, formed into a flexible tube, and covered with soft leather; it is rather more than six feet long. Mr. EAGER's is merely a cane of the same length, with a round knob of wood, firmly attached to one of its ends. Some dexterity is required to introduce these instruments. Another mode of curing this disease, is, by plunging a trocar, or sharp-pointed pen-knife, through the flank into the paunch, which may be readily distinguished on the left side, between the last rib and the haunch bone. The confined air will immediately rush out, and the animal will soon be relieved. This, though apparently a hazardous operation, has been often practised with success. It may be necessary to introduce a tube, to prevent the food from plugging up the orifice. When all the air has escaped, the wound is to be closed with a sticking plaster composed of equal parts of pitch, horse-turpentine, and wax. An improvement of Dr. MONRO's instrument is now sold by saddlers in general. In cases of emergency, a waggoner's whip may be employed: some soft leather is to be securely tied to the large end, which, after being smeared with lard, or oil, is to be forced down the gullet till it enter the paunch, which will be known by the air rushing out.

After the animal has been freed from this complaint, it should be fed sparingly, for two or three days; and if it has suffered considerably, some cordial medicine may be given.

BLOW-PIPE, an instrument by which the breath may be directed in a stream upon the flame of a lamp, or candle, in order to produce a great and intense heat for melting in small quantities, a variety of metallic and other substances. It is particularly used for chemical experiments.

The most common blow-pipe is a tube of brass, or iron, bent near one of its extremities, and drawn out sufficiently fine to keep up a constant stream of air, when blown into by the mouth, applied to the opposite end. A very ingenious blow-pipe, is that by Mr. PAUL, of Geneva, in which the flame is produced by vapour of alcohol. Mr. NEWMAN, of Lisle street, has also invented a blow-pipe, which has been very generally used, to obtain a high temperature, by the combustion of a mixture of oxygen and hydrogen gases. And Captain BAGNOLD has constructed a portable *pocket blow-pipe*, so that both hands are at liberty to manage the matters submitted to its action.

Experiments with the blow-pipe, have this advantage over those in crucibles, that we can see distinctly all the phenomena from beginning to end, by which means we are better enabled to draw conclusions.

BLOWING, an agitation of the air, by means of a pair of bellows, the mouth, &c. Butchers have a custom of blowing up meat, to deceive the buyer. This is a practice which should be discountenanced, as it cannot possibly do the meat any good, and in many instances must be injurious. The very idea, that a person blowing up meat might be affected with any loathsome disease, is sufficient to excite the community at large to put a stop, if possible, to the practice.

BLUE, one of the seven primitive colours of the rays of light, into which they are divided, when refracted through a glass prism.

The principal blues used in painting are, Prussian blue, bice, Saunder's blue, azure or smalt, verditer, &c., for the preparation of which see COLOUR-MAKING.

In dyeing, the principal blues are obtained from indigo and woad. See also DYEING.

BLUE-BOTTLE, or *Centaurea cyanus*, is a plant common in corn-fields.

A fine blue colour may be collected from the flowers of this plant. The in-

terior part of the flower is the deepest: if the juice of this be expressed, and a small quantity of alum be added to it, a permanent clear blue is produced, little inferior to ultramarine. A decoction of the flowers, with galls and green copperas, affords a good writing ink; and it may be also employed in dyeing.

BLUE, PRUSSIAN. See COLOUR-MAKING.

BLUE-VITRIOL, or **SULPHATE OF COPPER**, is obtained by evaporation, from the water of some copper mines; and by roasting copper pyrites, and exposing them to the action of air and moisture: it is also made by a direct solution of copper in diluted sulphuric acid, and boiling it down and setting it by to crystallize.

Sulphate of copper is inodorous, and has a very harsh, acrid, and styptic taste. It is in semitransparent crystals, of a deep rich blue colour. It is decomposed by the alkalies and lime. Dissolved in water, it forms with these different shades of blue and green, which are beautiful colours for staining rooms. See COLOUR-MAKING.

This powerful salt is emetic, astringent, and tonic, when taken internally. With a view to its emetic effect, it has been given in the early stages of phthisis, and where laudanum has been taken as a poison; and as an astringent, and tonic, in alvine hæmorrhages, intermittent fever, epilepsy, and some spasmodic affections: but as the materia medica contains equally powerful and less dangerous remedies, its internal use ought to be avoided.

Externally, it is employed in an escharotic to consume fungous, or proud flesh; and in solution as a stimulant to obstinate ulcers. Pledgets dipped in a weak solution of it are sometimes used for bleeding at the nose: and a still weaker solution is useful in some kinds of ophthalmia.

As an emetic the dose is from two grains to fifteen, in two fluidounces of water; but as a tonic, it should be given in the form of pills, beginning with a quarter of a grain, and gradually increasing the dose to two grains.

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It is also used by farmers, in curing the FOOT-ROT of sheep. See FOOT-ROT.

BLUEING, is the art of communicating a blue colour to various substances. Linens, cottons, and other articles, whose tints are only designed to be slight and temporary, are blued with smalt; or a mixture of indigo and starch, usually sold in lumps or cakes; dyers blue their stuffs and wools with wood or indigo.

Blueing of metals is performed by heating them in the fire till they assume a blue colour. It is particularly practised by gilders, who blue their metals before they apply the gold and silver leaf.

Blueing of iron is a method of beautifying that metal for mourning buckles, swords, &c. It is done thus: remove the black scurf from the iron, by rubbing it with a grind-stone, or whet-stone; then heat it in the fire, and as it grows hot, the colour changes by degrees till it become blue. Sometimes indigo and salad oil are ground together, and the mixture is rubbed on the work while it is heating, with a woollen rag, leaving it to cool gradually.

BLUSHING, a sudden suffusion or redness of the cheeks, excited most commonly by a sense of shame, on account of some vice, failing, imperfection, or by a correct perception of decorum and propriety, when the laws of good manners, or of delicacy, are infringed.

Blushing is a singular and extraordinary index of the human mind: were the causes of blushing uniform, and did they produce in every person under similar circumstances the same effects, physiognomy in this respect would promise us some certainty in its auguries. But such are the diversities of the human mind, and of the physical constitution, that no rules whatever can be established relating to it. Some persons will blush at an action, or at the recital of an action, which others will perform with indifference, and reflect upon without remorse or shame. The bare idea of being charged with an indelicacy, or

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a crime, will, in some persons, excite the most lively agitation, whilst others can be guilty of indelicacy, and even of crime, without either blushing, or evincing the appearance of agitation on being charged with it. Hence the danger of drawing conclusions of conscious guilt from the mere circumstance of a red suffusion of the face.

BOAR, the male of swine. See **HOG**.

BOAT, a small vessel, generally open, used chiefly in the navigation of rivers, lakes, and the like, and commonly wrought, or moved by oars, but occasionally by sails. Latterly, however, the term boat has been applied to a kind of vessel with a deck, which is impelled by steam, called a **STEAM BOAT**. See below.

The formation and names of boats, are various according to the purposes for which they are intended; hence they are slight or strong, with a keel or flat bottom, open, half, or whole decked, and plain, or ornamented: such as jolly-boat, long-boat, skiffe, cutter, gondola, pleasure-boat, &c.

M. Bernieres invented a boat, some trials with which were made at Paris, in the year 1777, and although eight men went into it, and rocked it till it filled with water, yet it could not be upset; and they afterwards rowed it along the river in that state without danger of sinking. A mast was added to it whilst full of water, and by a rope fastened to the top of it, the top of the mast was brought to touch the water, yet the rope being loosened, the boat recovered its equipoise. It could therefore be neither sunk nor overturned.

In the year 1785, Mr. Leckin obtained a patent for his improvement in the construction of boats and vessels, so that they will neither overset nor sink; but we have not room to describe this useful invention.

BOAT, ICE, a modern invention of Thomas Ritzler, of Hamburg, to save the lives of those persons who fall through broken ice into water. The body consists of wicker-work, covered with leather, to render it more impermeable by water, and so remarkably

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light, that it may be easily managed by one person both on the ice, and in the water. The length in the keel is $7\frac{1}{2}$ feet, and its whole length 12 feet; its breadth three feet at the bottom, and 4 at the upper part. As it is not easy to convey a complete idea of this boat in every respect, without the aid of drawings, we must content ourselves with observing, that the swiftness with which such boats may be managed by skilful hands is incredible; that many lives have been saved by them at Hamburgh; that a model of this boat may be seen in the Repository of the Society of Arts and Manufactures in the Adelphi, London. We earnestly recommend its use in Great Britain.

BOAT, LIFE. The life boat was invented by Mr. Henry Greathead, of South Shields, for the purpose of preserving the lives of shipwrecked persons. This boat measures thirty feet long, and the breadth ten; it resembles in form a common Greenland boat, but more flat in the bottom. The quantity of cork employed in its construction, is about seven hundred weight, with which it is lined, inside as well as outside the gunwales, two feet in breadth; the seats are also filled with the same material. It is rowed by ten men, double banked, and steered by one at each end with oars, being alike in its form at both ends, and so contrived, 'as not to sink in the sand. It draws very little water, and can carry twenty persons even when full of water. Being water-proof, and rendered buoyant by the cork, it always keeps afloat, preserving its equilibrium without danger of upsetting, and is able to contend against the most tremendous sea, having never failed in a single instance of conveying a distressed ship's crew in safety to the shore. Such a boat as this ought to be kept at every town in the united kingdom, that is in the neighbourhood of the sea, and which has at the same time a harbour, where it could be kept both in readiness and safety. It may cost 150*l.* but what sum is this when put in the balance with the saving of human life?

BOAT, STEAM. The steam-boat

is one of those triumphs of modern science which give a character to the present age. Navigation by the agency of steam was first adopted in the United States of America. Its utility is so great, that steam-boats are now navigated on various streams and estuaries of Great Britain. Boats of this kind are to be seen daily on the Thames, full of passengers, with bands of music, and moving at the rate of four or five miles an hour against the tide; with the stream they sometimes move 9 or 10. There is a steam-boat also on the Clyde in Scotland. A description of this boat will give our readers a good idea of these self-moving machines.

The extreme length of the Clyde steam-boat is 75 feet, breadth 14, and the height of the cabins $6\frac{1}{2}$ feet. She is built very flat, and draws from 2 feet 9 inches, to 3 feet of water. The best, or aft cabin, is 20 feet long, and is entered from the stern; between the aft cabin and the steam engine, which is the moving principle of the boat, a space of fifteen feet is allotted for goods. The engine is a 12-horse power, and occupies 15 feet. The fore cabin is 16 feet long, and is entered from the side. The paddles, 16 in number, which are the immediate agents of the propulsion, form two wheels, one of which is fixed on each side of the boat, of 9 feet diameter, and 4 feet broad, made of hammered iron; they dip into the water from one foot three, to one foot six inches. Along the outer edge of these wheels, a platform and rail are formed quite round the boat, projecting over, and supported by timbers reaching down the sides. It can accommodate 250 passengers, and is wrought by five men. The funnel of the boiler is 25 feet high; and carries a square sail 22 feet in breadth.

Steam-boats have been constructed in America of much larger dimensions than these; and in the course of the current year, 1819, one of this kind crossed the Atlantic, from America to Liverpool, in about 18 days.

Some accidents have occurred in the commencement of the use of these

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stupendous machines, but where proper precautions are taken, the powers of the engine previously proved, and the safety valve, by which the power of the steam is regulated, is in proper activity, and the whole under the direction of skilful and steady persons, as it always ought to be, no accident can possibly happen. See STEAM.

BOBBING, among fishermen, a particular manner of catching eels. A number of large earth worms are scoured, and a needle, armed with twisted silk, thread, or small twine, is run through them from end to end; as many of them are connected in this manner, as will fold in lengths of about four inches or more, a dozen times. The whole are fastened to a strong cord, and a few inches above the worms, a plummet is fixed, about three quarters of a pound weight; the cord is then fastened to a pole, about ten feet or more long. With this apparatus, in muddy water, when the eels are felt to tug at the bait, and are supposed to have swallowed it sufficiently, they are lifted quickly out of the water, either into the boat, or on shore.

BODY, in natural philosophy, implies a solid, extended, palpable substance; of itself merely passive, being indifferent either to motion or rest, except under peculiar circumstances, yet capable of an infinity of motions or figures. Body, in this acceptation, is opposed to mind, or the intellectual faculty which accompanies, more or less, most animated beings, and in a pre-eminent degree man. See MIND.

The human body in anatomy is divided into the trunk and the extremities. The trunk contains three principal parts: the neck, the thorax, and abdomen. The extremities consist of the head; the superior extremities of the shoulders, arms, and hands; and the inferior extremities consist of the thighs, legs, and feet. See ANATOMY.

The height of the human body is different in different parts of the day; the height in the morning ordinarily exceeds that at night by nearly an inch, in consequence of the synovia finding

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its way between the joints while the body is recumbent for some hours.

The human body ceases to grow in height when the bones arrive at a certain degree of firmness and rigidity, which will not admit of farther extension by the circulating fluids. This period appears to take place between the age of eighteen and twenty-four; but in females often one or two years earlier.

There subsists a very close, and, during life, indissoluble connexion between the body and mind, or soul, in so much that the one partakes more or less of the pleasures and pains of the other. Whatever tends to impart a proper tone and vigour to the body at the same time contributes to give due force and energy to the mind. So dependent are they upon each other that the body cannot long be exposed to pain or pleasure without the suffering, or the pleasure, being communicated to the mind; and, on the contrary, the mind cannot be long affected by pleasurable or painful sensations without communicating those sensations to the body, evinced either by some different mode of action, or the introduction of some disease. Hence the necessity and importance of the preservation of both mind and body in good health. See INSANITY.

BOG, a quagmire, generally covered with grass, but not always solid enough to support the body.

Bogshave, most probably, originated from the roots and trunks of trees, and other decayed vegetables.

Bogs, or peat-mosses, occupy no inconsiderable portion of the surface of the British Isles. They are of two sorts, one black and solid, the other spongy, containing a great quantity of water, with a small proportion of fibrous materials.

The black moss is capable of great melioration. It may be converted into pasture; or, after it has been thoroughly drained, thriving plantations may be raised upon it; or, under judicious management, it will produce crops of grain and roots: or it may be formed into meadow land of considerable value.

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Flow, fluid, or spongy mosses, are sometimes from ten to twenty feet deep, or more, but the average may be stated from four to eight. In high situations their improvement is attended with so much expense, that it is advisable to leave them in their original state; but where advantageously situated they may be profitably converted into arable land or valuable meadow. If they are not too high above the level of the sea, arable crops may be successfully cultivated. See **PEAT** and **MOSS LAND**.

To drain boggy lands trenches should be made of sufficient depth to carry off the moisture; these are to be partly filled up with rough stones, and then covered with thorn-bushes and straw to keep the earth from filling up the interstices; a stratum of good earth and turf may be laid over all; the cavities among the stones will give passage to the water, and the turf will grow on the surface so that no herbage will be lost. See **FEN**.

Bog-berry. See **VACCINIUM**.

BOIL is a small circumscribed tumour, or pointed tubercle, attended with redness, pain, and hardness, arising promiscuously in all parts of the body. It can be seldom dispersed; it commonly ripens, or turns to matter in the space of seven or eight days, and after the discharge of its contents (which are not the pus of a common abscess, nor so fluid, but consists chiefly in firm sloughs, which form a core) frequently heals without much trouble. Sometimes, however, it produces considerable pain, and does not readily suppurate. In this case a bread and milk poultice, or the poultice mentioned under the article **ABSCCESS**, composed of the grounds of porter, or beer, and bread, or linseed meal, if the bread and milk poultice be not strong enough, will be necessary to be applied. After the boil has come to a head, if it should not be disposed to heal kindly, a plaster of yellow basilicon sprinkled with red precipitate (nitric-oxyd of mercury) applied for a day or two, or sometimes even for a few hours, will answer the purpose. Some boils may be cured by the applica-

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tion of the compound galbanum plaster alone.

In this kind of tumour the core must be got rid of before the sore will heal.

In some constitutions, boils are repeatedly breaking out, and give great uneasiness and trouble. When this is the case, we may be sure that there is something amiss in the constitution: besides healing the external sores, it will be necessary to have recourse to such medicines as will alter the vitiated fluids; what the medicines ought to be will depend upon a variety of circumstances; but as such boils generally arise from debility, those medicines which improve the general health will, most probably, be the best.

BOILER, a vessel in which any thing is boiled; but in a more restricted sense, is a vessel used for boiling food; and it is under this last sense that we propose to consider it.

Many ingenious vessels and utensils have at different periods been invented to facilitate the process of boiling and save the consumption of fuel. So many persons have lately been candidates for public favour in this way, that it is not easy to say who is the most entitled to pre-eminence. Where, indeed, food is to be cooked in the *large way*, there can be no doubt that boilers heated by the agency of **STEAM** are greatly to be preferred to any other method hitherto discovered. For this purpose Mr. **JOHN PONTIFAX**, of Shoe Lane, London, has ingeniously contrived apparatus at the Royal Naval Asylum at Greenwich and elsewhere, which answer admirably on the score of economy as well as expedition. Steam Kitchens, as they are called, have also been constructed for private families, which are very convenient; amongst these Mr. **SLATER**'s has come into much use. Mr. **JAMES WALKER**, of Bridge-street, Blackfriars, has also contrived an improved kitchen range, which, for those who are disposed to go to the first expense, and this, as well as Mr. Slater's, is considerable, promises much convenience and utility.

Mr. Walker's steam range does not consume more fuel, or require more

attention, than a common range. The superiority of his boiler to all others, for the same purpose, will be evident by the following description. It occupies the whole of the left-hand side of the range and the back, both forming one entire vessel; so that a quantity of water is always kept boiling when there is a fire in the grate, by the superfluous heat that would otherwise be applied only to the back; and also by these means, a very considerable expense is saved, as the additional consumption of fuel by flues is thus rendered unnecessary. All other apparatus of this kind having a boiler at the back only, the water cannot be made warm without a large portion of additional fuel; and flues are in this case also necessary, by which the heat is drawn off from the front of the fire, which prevents the meat from roasting without a constant supply of fresh coals, whereas with Mr. Walker's boiler, a flue can scarcely ever be wanted, except it be to supply an adjoining bath, or the washing troughs. A large quantity of boiling water constantly ready for use is certainly a valuable acquisition in all families, the boiler retaining its heat for at least seven hours after the fire is extinguished. And as the pipes will convey the steam to any part of the house, for heating the sitting rooms, or indeed for any other purpose for which steam may be wanted, it is, we think, evident that this is one of the most convenient and economical plans for the application of heat to domestic uses which has yet been invented.

In economizing heat in these and all such apparatus, it cannot be too often repeated, that the method, and the materials, in which they are fixed, are of the first importance. In order to prevent the waste of heat as much as possible, those substances with which the boilers, &c. come in contact ought to be *bad conductors of heat*: all metals are good conductors of heat; charcoal, wood ashes, dry coal-ashes, dry lime, rubbish, and air, are bad conductors of heat; dense stone, and close and compact bricks are better conductors of heat

than light porous stone and porous bricks: we mention these things here because we know that upon the materials surrounding boilers and fire-places, as well as in the mode of setting the apparatus, does the economy of fuel, amongst other things, depend; and we do not think that this consideration has yet had the weight in the setting of boilers to which it is justly entitled. See STEAM.

With respect to the best kind of boiler for culinary purposes, and on the most usual and common occasions, we are happy to observe that the good sense of the community is rapidly discarding all those made of copper, and substituting cast iron ones in their stead. Copper vessels indeed ought not to be used at any time in the preparation of food: for if, by any means, a portion of the copper should be dissolved, serious accidents may happen; indeed, several cases of death have occurred from eating salad dressed with vinegar, which had been kept in copper vessels. See COPPER and POISON.

BOILING, in the culinary art, is a method of dressing food, vegetables, &c. in water made so hot that it bubbles up, and flies off in steam: the boiling point of water under ordinary circumstances is 212° of Fahrenheit's thermometer.

Boiling removes from the food certain crudities, and renders it more agreeable to the palate, as well as more suitable to the stomach. By too much boiling, however, animal as well as vegetable food is deprived of a considerable part of its nutritive matter; by long boiling of animal food, in particular the principal part of the gelatine is dissolved in the water, and its nutritive quality depending principally upon the gelatine is destroyed. Hence the importance of broths when properly prepared: (see BEEF-TEA and BROTH.) The culinary process of stewing is more profitable, as well as more nutritious than boiling; but, from every observation which we have been enabled to make, the process of roasting is calculated to yield the most nutritious kind

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of animal food, the fat and exterior part of such food especially excepted. See **ALIMENT**.

BOLE, a friable earthy substance uniting with water into a smooth paste, adhering to the tongue, and dissolving, as it were, in the mouth. Boles are commonly of a dull red colour. There are various kinds of bole: the *French bole* and *Armenian bole* are those principally in use. They are given occasionally in diarrhoeas, but are more commonly used as an ingredient in tooth-powder.

BOLUS, a form of medicine about the consistence of stiff dough, rolled round, considerably larger than pills, yet not too large to be swallowed.

BOND, in law, a deed whereby the obligor obliges himself, his heirs, executors, and administrators, to pay a certain sum of money to another at a day appointed. This is called a simple bond. But there is generally a condition attached, that if the obligor does some particular act, the obligation shall be void, or else shall remain in full force: as payment of rent, performance of covenants in a deed, or repayment of a principal sum of money borrowed of the obligee with interest; which sum is usually one half of the penal sum specified in the bond. In case this condition is not performed the bond becomes forfeited, or absolute at law, and charges the obligor, whilst living, and after his death the obligation descends to his heir, who, on defect of personal effects, is bound to discharge it, provided he has real assets by descent as a recompense.

If the condition of a bond be impossible at the time of making it, or be to do a thing contrary to some rule of law that is merely positive, or be uncertain, or insensible, the condition alone is void, and the bond shall stand single and unconditional: for it is the folly of the obligor to enter into such an obligation from which he can never be released.

If it be to do a thing that is wrong, or bad in itself, the obligation itself is void: for the whole is an unlawful contract, and the obligee shall take no ad-

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vantage from such a transaction. And if the condition be possible at the time of making, and afterwards become impossible by the act of God, the act of the law, or the act of the obligee himself, there the penalty of the obligation is saved: for no prudence, or foresight of the obligor could guard against such a contingency.

When money-bonds are forfeited, the payment, or tender of the principal sum borrowed, with interest and costs, is a full satisfaction and discharge.

Bonds are subject to stamp duties, in proportion to the amount for which they are security.

BONES are substances more or less solid: they support and form the stature of the animal body, defend its viscera, and give power to the various muscles. The most accurate analysis of bones, gives for their component part—of animal matter, (fat, gelatine, and albumen) 51 parts; of phosphate of lime, 37,7 parts; of carbonate of lime 10; of phosphate of magnesia, 1,3 with occasional traces of a minute quantity of sulphate of lime. These earthy salts constitute the hardening principle of bone.

The number of bones in the human body is generally 240; but in some individuals, who have two additional bones in each thumb and great toe, they amount to 248. For a more minute account of these bones see **ANATOMY**.

It is generally believed that bones in a healthy state are insensible to pain, because the larger ones are unconnected with any nerve. See **FRACTURES** and **TEETH**.

Bones are subject to a variety of diseases, amongst which the *mollities ossium*, or softness of the bones, is very frequent in infants, although sometimes seen in adults from a bad state of the body. The effects of scorbutic humour, in rendering the bones soft in many instances, have often been remarked. Animal food, beef-tea, gentle friction, with coarse cloths, exercise, and tepid, or warm bathing, (not cold as has been too often recommended in this complaint,) promise the most suc-

cess in complaints of this kind, not only in childhood, but in the adult state.

The *friabilitas ossium*, or brittleness of the bones, arises sometimes from repeated salivations; in old persons they are frequently so brittle, that a slight fall or blow will break them; and in some instances they have been fractured merely from the weight of the body, and the action of the muscles. For the brittleness of the bones in old people we cannot expect a cure: it evidently arises from an accumulation of the earthy salts in them; if indeed that accumulation could be prevented, the brittleness of the bones would not take place; and human life may, possibly, by such means be prolonged. Acid food, and vegetables, indicate the most probable means of effectuating this; but, alas! this is a discovery, if discovery be possible, reserved for some future age, and some happier children of Esculapius.

Digesters have been recommended for abstracting the nutritive property, the gelatine of bones; but it too often happens that the best is so unskilfully managed, that the earthy salts become mixed with the liquor, and render it disagreeable. When this is the case, we do not think it either wholesome or proper to eat such food.

Bones either broken in pieces by a mill, or the refuse turnings and dust of bone and horn manufacturers, are used with much advantage as *manures*, and are peculiarly calculated for lime-stone land. Sixty bushels are applied per acre. They are sometimes mixed with earth in a compost; but are most successfully applied when crushed in a bone mill. They are an excellent dressing for meadows, or pastures, but for arable land are not considered superior to lime or dung.

Bones are used for various purposes: besides toys, and many articles in domestic economy made of bones, they are used extensively in many of the chemical arts: for the manufacture of ivory black, sal ammoniac, &c. &c. And the shavings of bones are, we are very sorry to say too often sold as the

shavings of hartshorn for the making of jellies.

Bones may be coloured by various means. They may be boiled in a solution of alum, and afterwards steeped in a decoction, made of any substance proper for dyeing colours; a red colour, for instance, is produced by boiling half a pound of Brazil wood for an hour, in a gallon of strong lime water; in which the bones are suffered to lie till they become of a proper colour; if they should be of too purple a hue, it will be necessary to plunge them again into a solution of alum, which will bring them to a crimson, or scarlet shade.

Bones may be easily spotted or variegated by metallic solutions: a solution of silver in *aqua-fortis*, gives, according to its strength, a black, or brown colour;—of gold in *aqua-regia*, a fine purple;—of copper in the acetous acid, a pleasant green; of the same metal in the water of ammonia, at first a deep blue, afterwards, on exposure to the air, a green. A few hours are sufficient for the two first solutions to give the required colour; but the bones should be steeped in the copper liquors at least twenty-four hours. The variegation of the colours may be caused by covering those parts of the bones intended for receiving other colours, or to remain white, with wax, or other material not soluble in the dyeing liquor.

BOOK, a general name for most literary compositions; but is with more propriety, and more generally, applied to such productions as extend to the size of a volume.

Before the invention of printing, and of the manufacture of paper from linen, books were so scarce and dear, as to be without the reach of all but persons of considerable opulence. Though the materials of which they were made had been cheap, and as plentiful as paper is at present, the labour of multiplying copies in manuscript, would always have kept their numbers comparatively scanty, and their price high.

Hence, in all nations of antiquity,

BOOK

learning was almost exclusively confined to people of rank, and the lower orders were only rescued from total ignorance by the reflected light of their superiors; and raised above rudeness and barbarism by that partial improvement, which men of cultivation and refinement necessarily impart, in a greater or less degree, to all within the sphere of their influence. The Papyrus, a kind of broad-leaved rush, being the cheapest material for the reception of writing, was, of course, in general use: *Parch-ment* was afterwards substituted; but it was so difficult to be procured, that it was customary to erase the writing of an ancient manuscript to make room for some other composition. In this manner, many of the works of the ancients have been lost. Books were indeed for many ages so scarce, that to present a book to a religious house was thought so valuable a donation, as to merit eternal salvation, and it was offered upon the altar with great ceremony.

The writing of Moses in the Old Testament are supposed to be the most ancient books of any extant; but as several are cited by this author, some must undoubtedly have existed previous to his time. The oldest books of a profane nature with which we are acquainted, are Homer's Poems; though the Greek authors mention a great number of other writers prior to Homer.

Books were first made square in the form of blocks and tables, but that of rolls was afterwards found most convenient: they were composed of several sheets fastened together, and rolled upon a stick. The volume, when extended, was commonly fifty yards in length, and half a yard wide. The present form of books was not unknown to the ancients, though little used by them.

The making of paper, such as we now use, is dated by the generality of writers, at the eleventh or twelfth century; and the honour of the discovery is claimed by different and distinct nations. The first book which was printed on paper, manufactured in England, came out without a date, about

the year 1495 or 1496, about fifty years after the invention of printing, although, for a long time afterwards, it was brought from abroad.

The arrangement and internal economy of books, have also, in the course of time, undergone many variations. At first the letters were only divided into lines, afterwards into separate words, which were by degrees separated by points, into periods, paragraphs, chapters, and other divisions. Langton, Archbishop of Canterbury, divided the BIBLE into chapters about the year 1200, and Robert Stephens into verses, so late as the middle of the fifteenth century. The Orientals began their lines from the right, and carried them to the left, while the Greeks wrote in both directions alternately, beginning in the one, and returning in the other. The Chinese extend their lines from the top of the page to the bottom.

Although books will not always supply the absence of actual acquaintance with the world, nor impress many scientific and other processes, equally with positive practice, and personal attendance on such processes; yet, inasmuch as it never can be possible for any individual to become practically acquainted with all the sciences in their multitudinous ramifications; and as PRINCIPLES are of great importance, we cannot impress upon our readers too strongly the necessity of reading, and of acquiring knowledge by books.

Books contain the best aggregation of that knowledge which has been from time to time acquired, or struck out by the active genius and industry of man. Books enable us to know how men have thought and acted in past ages, so that, by a contemplation of their conduct, we are better enabled to shape our own. Books afford a luxurious treat to the imagination and the feelings. By books we are wafted to distant ages, and inspired with those lofty motives for our actions, which have ever, more or less, prompted the good, the great, and the wise.

It is by the diffusion of knowledge by books, that all species of tyranny and

pression, can be most effectually resisted; it is by the diffusion of books, that mankind become acquainted in the best way, with their moral and religious duties, provided, of course, the books be properly selected; and it is also by books that men generally become distinguished for their intelligence, probity, and worth: for where the diffusion of knowledge by books has not taken place; or where certain books only are permitted to be read, there we most commonly find the human mind in the most abject state, and the relative and social duties, indifferently or little, if at all, practised.

The *multitude of books* has been long complained of; but we believe, notwithstanding what Solomon says, that the multitude of books is, upon the whole, a great advantage to mankind. From the variety of tastes, it is not possible that one particular kind of book, and one style, will suit all. Some books are to be studied, others only to be referred to occasionally, as dictionaries, cyclopædias, &c.; and others to be read merely for amusement. There are many things too, which are much better preserved in books than in the memory; which is frequently uselessly burdened for no possible good.

The best remedy for the *worms* which infest books is, mineral salts, mixed in the paste used by the bookbinders: a small quantity of either alum, or sulphate of iron, will answer the purpose. A little powdered alum strewed between the book and its cover, and also upon the shelves of the library, will also be of service.

Greasy spots may be got out of the leaves of books, by first warming them and getting as much out as possible by means of blotting-paper, afterwards let a brush, dipped in the purest oil of turpentine, made hot, be drawn over both sides of the paper, which ought to be kept warm. This operation should be repeated till all the grease is extracted. The application of blotting paper, to absorb the turpentine, as it dissolves the grease, will be of advantage. Last-

ly, the paper may be brushed with rectified spirits of wine.

BOOK-KEEPING, is the art of recording money, and other transactions, connected with buying and selling, in a scientific manner.

Although we do not insist upon every domestic economist learning the Italian method of book-keeping, commonly called *double entry*, yet, we think it quite necessary that every person, both male and female, should learn sufficient of the nature of keeping a common account, to be enabled to do so without the assistance of a clerk, or any other person.

Without entering into the merits of particular systems, it may be sufficient to observe, that for all common purposes, and when there are but two parties concerned, viz. the debtor and the creditor, the simplest and commonest method of book-keeping is the best. In private families, a book containing on one page the money received, and on the opposite page the money paid, will be generally sufficient, if accompanied with proper descriptions of the articles paid for, the person to whom the money is paid, and dates. Persons who have much business, of any kind, will of course find it convenient to make entries of every thing bought or sold, whether paid for or not, in a book commonly called a *day-book*; and, in their cash-book, enter all moneys received, or paid, and from whom, or to whom, should also be specified. These daily entries, if unsettled, should be posted, either monthly or oftener, into individual accounts in the *ledger*.

BOOT, a leather cover for the leg and foot, worn to keep the body more firm, and defend the part from the injuries of the weather. The boot is not a modern invention: it was worn in the Roman army, both by the cavalry and infantry; it was originally made of leather, but afterwards of brass, or iron, that it might be proof against the sword.

There are various kinds of boots, as hunting-boots, fishing-boots, jack-boots, Hessian-boots, half-boots, &c.; these last

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are now frequently worn by the ladies. The following is recommended to preserve boots water-proof: take one pint of linseed oil, half a pound of mutton suet, six ounces of bees-wax, and four ounces of yellow rosin, melt them over a slow fire, and the boots when new and quite clean, are to be warmed, and rubbed with the composition till the leather is completely saturated. See **BLACKING-BALL**.

BORAGE, the *borago* of L. a genus of plants of which there are seven species.

The common borage, *borago officinalis* is a native plant, found growing in waste lands. It is rough and clothed with small prickly hairs; has alternate leaves, and bears blue spreading flowers, in June and July. Nitre may be obtained from the leaves of this plant: but its qualities are, notwithstanding, of little importance. The leaves and flowers are principally used in this island, in the grateful summer beverage, known by the name of cool tankard.

BORAX, or **SUBBORATE OF SODA**, is imported from India, in an impure state, under the name of *Tincal*, which, when purified, is called *Borax*. It is inodorous, of a white colour, and usually, in irregular crystallize masses. It effloresces slightly and slowly in the air, and dissolves in twelve times its weight of water. Its taste is styptic, cool, and alkaliescent. It consists of 34 parts of boracic acid, 17 parts of soda, and 49 parts of water.

Borax is applied to various important uses. It is employed as a flux in many metallic operations, and is of the greatest use in analyses by the blow-pipe. It may be applied with advantage in glass-manufactories: for when the fusion turns out bad, a small quantity of borax re-establishes it. To jewellers and goldsmiths it is especially useful in soldering; and, but for its dearness, would be used for many other purposes.

As a medicine, this salt is refrigerant and detergent. It is not given internally, but is chiefly employed in the

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aphthous affections (the thrush) of the mouth, both in children and adults, and in excessive salivation. It is applied either in the form of powder, mixed with sugar, or dissolved in water, and united with honey as a lotion. It is said also that a few grains of borax dissolved in water, with the addition of a little honey, is a balsamic application for sore nipples, and chapped lips and hands, in frosty weather.

BORECOLE. See **CABBAGE**.

BOTANY, that branch of natural history which treats of vegetables. Botany is unquestionably a most pleasing and amusing study; but this science, as well as too many others, has till lately laboured under various disadvantages, which made it unpleasant as well as difficult to acquire. The great variety of names which were given to the same plants, without any order or classification, for a long period rendered it a wilderness in which few could gather any fruit whatever, till about the middle of the last century, **LINNÆUS**, an illustrious Swede, pointed out the true method in which a botanical arrangement ought to be adopted, and the way in which the study of this interesting science should be pursued.

Having prepared the rules by which this science ought to be acquired, he determined the genera of plants, and afterwards the species; and by keeping the old names which agreed with the new rules, and new modelling all the rest, he established a nomenclature more consonant with nature, and more easily understood. He also invented specific names, which he joined to the generic ones, in order to distinguish the species.

The Linnæan system is founded on the supposition that there is in vegetables, as well as in animals, a real distinction of the sexes; that each plant may be analyzed by its several organs of fructification; and consequently that it is necessary to acquire an accurate knowledge of the number, shape, situation, and proportion, of these parts. Hence, as all vegetables are capable of producing blossoms, fruit, or seed, the parts

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which compose the flower must be minutely examined in every plant. These consist of the *calyx*, or flower-cup, or empalement; the *corolla*, or blossom, or flower-leaf; the *stamina*, or chives; the *pistillum*, or pointal; the *pericarpium*, or seed-vessel; the *semina*, or seeds: to these may be added the nectary, or honey-cup, and the receptacle.

To pursue the study of plants with advantage, that of the nomenclature must not be neglected: indeed, it is scarcely possible to make much progress without it. In this respect it is very much to be regretted that those persons who have given us, since the promulgation of the Linnæan system, compendiums of botany, have not paid that attention to the trivial and common names of plants, which, in order to facilitate the study of this science, it is necessary to do.

The vegetable world is divided by Linnæus into 24 classes, and these again into orders.

The classes respectively refer to the number of stamens, or male parts of the flower, as far as class 13 inclusively, and afterwards to their position. The orders are denominated from the number of pistils, or female parts, as far as to class 13 inclusively; and afterwards from some other circumstances of a different description selected to constitute an ordinal character, such as gymnospermic, or with naked seeds; angiospermic, or with seeds in a pericarp; siliculous, or with seeds in a pod. The order is also very frequently denominated from the number of the males, male parts, or anthers, the class embracing such orders being denominated from their position, peculiar junction with, or disjunction from the females. And sometimes it is denominated from other characteristics of a class, where the class in question is marked by a characteristic of a different kind. Thus the term polygamia, which constitutes class 23, serves with various trivial additional names, for several orders under class 19, or syngenesia; while again, the terms monœcia and dioœcia, which designate classes 21, 22, are adopted to represent distinct

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orders in class 23. It is hence obvious that not only the sexual system of Linnæus is partly natural and partly artificial, and as such imperfect in its arrangement; but that the artificial section of it is by no means totally free from intricacy and confusion. Yet, upon the whole, it is by far the clearest and best which has hitherto been proposed, well worthy of the approbation bestowed upon it, and continues to be quoted and referred to as a sort of landmark by botanical writers.

To insist upon the utility of botany is unnecessary: it is not only a useful, it is an amusing and delightful study, as indeed all studies of nature, more or less, are. It contributes to our health, furnishes us with objects to engage our attention at every foot-step, even in a solitary walk, and leads to pleasing reflections on the wisdom and grandeur of the DEITY.

BOTTLE, a small vessel made of glass, leather, or stone, for the purpose of holding liquors. It is also used to denote a quantity of liquor put into a bottle.

The common practice of cleansing wine, or other glass bottles with shot is bad: for if, by accident, any of it should remain when the bottles are again filled with wine, or other liquors possessing acids, the metal will be dissolved, and of course communicate to them its deleterious qualities. Potash dissolved in water will sometimes answer the purpose of cleansing the inside of bottles; but a coarse rough sand, or what is infinitely better, small heavy coal-cinders from a smith's forge, about the size of shot, will get off, being agitated with water, almost any impurities, except oleous ones, from the interior of glass bottles.

BOTTLING is the filling of bottles with liquor, and corking them in order to preserve it.

All liquor should be bottled with caution, and in cool, if not in cold, weather; and it is particularly desirable in bottling all vinous liquors, whether they be wines, malt liquors, or cider, that a cock should be so long in the nose, and

so small as to descend into the neck of the bottle, so that immediate contact with the external air, as well as the loss of any of the spirit, or other good qualities of the liquor, may, as much as possible, be prevented. No liquor should be bottled till it is fine; nor, when fine, would it be advisable to bottle it, particularly in the spring, if there be reason to know, by its sensible sweetness, that the active fermentation is not yet gone through: for in this case the mere motion of the liquor by bottling will frequently accelerate such fermentation, and the bottles may burst; particularly unless care be taken to put them in a very cool place.

Bottles which are filled with liquor should be kept on their sides, and, as much as possible, be involved in sawdust, or any other bad conductor of heat, in a place subject to little or no change of temperature, *provided* the liquors are arrived at the most desirable state for drinking: but some wines, Madeira for instance, as well as other liquors, whose fermentation is not completed, will improve by being kept in a closet or cellar warmer than the average temperature of this country.

BOTT, in farriery, a short reddish-coloured worm, often found in the stomach and intestines of horses. This worm is the larva of the gad-fly, *Oestrus equi*; there is also another species, the larva of the *Oestrus hæmorrhoidalis*, of a red colour and smaller, which also is very annoying to horses.

The gad-fly deposits its eggs on a horse's coat in such a manner as that they shall be received into the stomach and become botts. The inside of the knee is the part generally preferred by the flies for depositing their eggs; and next to that, the side and back part of the shoulder. It is curious that these parts are most exposed to be licked by the animal; in licking the eggs adhere to the tongue, and are carried into the horse's stomach with the saliva. The botts attach themselves to every part of the stomach, but are usually more numerous about its further orifice; and are sometimes, though less frequently,

found in the bowels. Their numbers vary considerably, sometimes there are not above half a dozen; at others they exceed a hundred. They most usually hang in clusters fixed by the small end to the inner coat of the stomach, to which they attach themselves by means of two hooks. It is extremely difficult to destroy them by any medicines, or even poison thrown into the stomach,

The most certain sign of these, as well as other worms in a horse, except that of their being voided with the dung, is the appearance of a light yellowish matter immediately under the fundament. Horses which have worms become thin and hide-bound, have a dry and staring coat, with languor and weakness, and in some instances they have slight attacks of colic. Worms, however, often exist in the stomach and bowels without producing such effects, or without their existence being suspected while the animal is alive. In some cases botts have caused the most serious diseases, such as staggers, inflammation of the lungs, of the stomach, and even death.

No effectual remedy has yet been discovered for the cure of botts in horses. Mercurial purges promise most success. The following will be found most effectual: take of yellow emetic mercury one drachm; of liquorice and linseed powder of each half an ounce; syrup or honey sufficient to form the mass, which divide into two balls. The horse should be put upon a diet of bran before this medicine is given; after which let him take one of these balls, and the other about forty hours afterwards; and when you have waited about the same time for the operation of the medicine, let the following brisk purge be given: take of Barbadoes aloes from 6 to 8 drachms; calomel one drachm; Venice turpentine sufficient to form a ball. If this proceeding should not be effectual, a second course may be repeated about a fortnight afterwards.

Box, savin, and antimony have been also recommended in this complaint, but we have never found them of any use.

BOUGIE, a long, slender, and elas-

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tic instrument made of twisted tape covered with wax and oil, or of catgut, or Indian rubber. It is used principally by surgeons, who pass it through the urethra into the bladder. It is also sometimes worn in the urethra to remove strictures, &c. The bougie is also sometimes armed with a caustic for particular operations.

BOW, an instrument made of wood, horn, or some elastic substance bent into a curve, in which position it is kept by a string fastened to each end.

The *long-bow*, so called by way of distinction from the cross-bow, is the most ancient of all weapons, and has been very generally used by remote and barbarous nations.

The Indians still make use of the bow; the repository of the Royal Society contains a West Indian bow two yards long. See **ARCHERY**.

The *cross-bow* consists of a steel bow set in a shaft of wood with a string and trigger. It is bent by means of a piece of steel, and expels bullets, large arrows, darts, &c. with great velocity.

BOWELS, or intestines, are very important parts in the animal economy. (See **ABDOMEN**.) They are liable to many diseases which require particular attention, and if neglected may be attended with dangerous, and even fatal consequences. See **BELLY**, **COSTIVENESS**, **DYSENTERY**, **DIARRHŒA**, **PILES**, &c.

BOWELS, INFLAMMATION OF THE. This disease shews itself by an acute, fixed, and burning pain in the abdomen, attended with fever, vomiting, and obstinate costiveness, and a hard and small pulse. The pain is often felt in different parts of the belly, but more frequently spreads over the whole, and is particularly violent about the navel: 'the tongue is parched and brown,' and the thirst unquenchable.

It may arise from any acrid substances taken by the mouth; from vehement passion; by large draughts of cold liquor, especially when the person is very hot; it may also arise from external injuries, such as blows, contusions, &c.

BOW

It may be also the consequence of other diseases, as hernia, costiveness, dysentery, worms, &c.

The most dangerous error with respect to the treatment of this disease is when it is mistaken for colic pains, to which the uninstructed generally refer almost every painful affection of the belly. The remedies too often had recourse to on such occasions are aromatic, spirituous, and heating liquors: than these in this complaint nothing can be more mischievous.

If the pain, before the disease has long existed, change its situation and become less violent; if the vomitings lessen and stools are procured, and if the pulsation of the artery at the wrist seem to expand, there is reason to expect that the disease is going off. But if the pain increase and keep constantly in one point, and the belly become more tense and tender to the touch; if no stools be obtained, and the vomiting become more frequent, accompanied with stercoraceous matter, the disease is certainly increasing; and should sudden cessation of pain, hiccups, clammy sweats, blackness of the tongue, fallen countenance, and coldness of the extremities occur, these evince that death is very near.

In this disease few persons ought to trust to their own judgment. But every painful affection of the belly should be attended to. If it becomes swelled, hard, and painful to the touch, and the pulse hard and contracted, blood should be taken from the arm, and the patient put into a warm bath about the same temperature as the skin; or, if this cannot be conveniently done, flannels wrung out of hot water should be applied to the belly. Mild emollient clysters of barley-water, gruel, &c. may be given until stools be obtained, and the patient put to bed between the blankets, and supplied moderately with the most bland, diluting liquors, such as barley-water, gruel, rice-gruel, &c.

When the disease is to all appearance removed, the greatest care will be necessary to prevent a relapse. The passing

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suddenly into a much warmer, or a much colder temperature must be particularly avoided.

If the inflammation be occasioned by a confined rupture it may be sometimes reduced by fomentation with cold water and ice, or by dropping and evaporating sulphuric ether on the protuberant part. Diluent and emollient liquids are in this case injurious; if the external applications do not succeed the patient must submit to an operation without delay.

Suppressed hæmorrhoids, and other natural fluxes, should be restored by the application of leeches to the parts, and warm fomentations. Diarrhœas and dysenteries ought to be treated according to their causes; and poison introduced into the stomach should be remedied according to the rules given under the heads **ARSENIC, POISONS, &c.**

BOWELS OF THE HORSE, Inflammation of the. The most conspicuous symptom of this disease is the excessive pain under which the animal appears to labour, which causes him to be very restless, frequently lying down and suddenly rising again; he looks round to his flanks and endeavours to strike his belly with his hind feet; his ears and legs are cold, and the violence of the pain often occasions profuse perspiration. A quick pulse and redness of the inner surface of the eye-lid should be considered as characteristic marks of this complaint when accompanying the above symptoms.

Indigestion, from improper feeding, flatulency from cold water unseasonably given, a chill, or suppressed perspiration, among other causes, produce this disease.

When inflammation has taken place to a considerable degree, medical aid will be of little avail; we must therefore be particularly attentive to those symptoms which indicate its approach. Bleeding is the first remedy, and it must be done sparingly. If the animal be costive, glysters and a dose of castor oil are proper; but if the bowels are lax, arrow-root, or wheat-flour gruel should be given. The belly and sides are to be

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well rubbed with the mustard embrocation, (see **MUSTARD**;) and the legs may be stimulated by the same means. If this treatment fail there will be no chance of the animal's recovery. When the symptoms are abating, and until he is perfectly recovered, a moderate quantity of soft food, such as bran mash, should only be allowed him.

A frequent cause of inflammation of a horse's bowels is immoderate purgation. Five drachms of good aloes are in general a sufficient purging dose for a saddle horse; whereas double the quantity is too often given. In this case the evacuations must not be immediately suppressed, but gruel made of arrow-root, starch, or wheat-flour, may be given; he may be allowed also a decoction of rice. Should these fail, half an ounce of tincture of opium may be given twice or three times in the twenty-four hours.

If the inflammation be accompanied with costiveness, the first object will be to procure an evacuation of the confined excrement, by means of oily laxatives and glysters. See **GLYSTERS**, and **COSTIVENESS**.

BOWEL-GALLED. A horse is said to be bowel-galled when the girth frets and inflames the skin between the elbow of the fore legs and the ribs. The part should be washed frequently with a solution, composed of one ounce of acetate (sugar) of lead, and two quarts of water. The proper application of a crupper to the saddle, will prevent the recurrence of the evil.

BOX-TREE, or *Buxus*, a genus of plants containing three species; namely, the *sempervirens*, the *angustifolia*, and the *suffruticosa*.

The *sempervirens*, or common box, is indigenous to this country. Of it there are three varieties, which are propagated in gardens; and this, as well as the second, may be raised either from seeds or cuttings; the latter should be planted in a shady place in the autumnal season, and be watered till they have taken root. The seeds should be sown soon after they are ripe, in a shady border.

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Box trees may be transplanted at any time, except midsummer, provided they be taken up with a mass of earth, but the best time for their removal is October.

The *suffruticos*, a Dwarf, or Dutch Box, may be propagated by parting the roots, or planting the slips.

The uses of the large kind of boxwood are various: many articles of turnery and musical instruments are manufactured of it: combs are also frequently made of it. Its admitting of a beautiful polish, and resisting the attacks of worms, make it desirable for furniture, in making many articles of which it is employed. Box is also used for wood engravings; it is usually imported in masses from Turkey for this purpose. It is of greater specific gravity than any other of European growth, as it will not float in water.

Box does not appear to be of any use in medicine.

BRACES, an article of dress now very generally adopted, passing over the shoulders, and attached to the small-clothes beneath the waistcoat, by which a tight cincture of the body is altogether rendered unnecessary; this, and similar improvements in dress cannot be too strongly recommended, both to male and females, for health as well as comfort. If they could be applied to keep up the stockings, instead of tight garters, the application would be a manifest improvement: for garters occasion mischief, not only by injuring the part to which they are applied, but in disposing the thighs and legs to drop-sy, and inducing great fatigue in walking.

BRAIN, in anatomy, a great viscus, of an oval figure, occupying the cavity of the skull, and larger in man, in proportion to his size, than in any other animal.

The brain consists of the *cerebrum*, which occupies all the upper and fore-part of the skull, being separated from the *cerebellum* by the second process of the membrane, called *dura mater*. Its upper side is divided into two hemispheres, and its lower side into four lobes, two anterior, and two posterior, which latter are much the largest.

The *cerebellum*, or little brain, is

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situated under the second process of the *dura mater*. The medullary part in the *cerebellum*, though it is inmost as in the *cerebrum*, yet is of a different shape, being branched out like a plant.

The substance of the brain is composed of two parts, differing somewhat in colour, but very little in nature; the outermost, from slightly resembling wood-ashes in colour, is termed the *cineritious*, or cortical part, and the innermost, the *medullary* part.

The *medulla oblongata*, is a medullary continuation of the under part of the *cerebrum* and *cerebellum*.

And the *medulla spinalis*, or spinal marrow, is a continuation of the *medulla oblongata*, through the great foramen, or hole in the skull, and throughout the channel of the spine, or back-bone.

The brain is the primary origin of all the nerves of the body, ten pairs of which arise immediately from this organ, and thirty pairs from the spinal marrow. Hence every sensation in an animal body, is either derived from the brain, or from the spinal marrow, which is a continuation of the brain; and it is conveyed thence through the medium of the nerves, to all parts of the sentient body.

The brain not only imparts a power of motion and feeling to every part of the body, but it is also the common recipient of all the impressions made upon the nerves in every part of the body, and is therefore the grand *sensorium*, or depository of all the senses. The brain is evidently the seat of those surprising faculties which constitute our intellectual part, denominated *MIND*; or, in a religious sense, the *SOUL*.

Wounds in the *cerebrum*, though very dangerous, are not mortal; but in the *cerebellum*, and *medulla oblongata*, cause sudden death; and in the *medulla spinalis*, loss of sense, and healthy motion in all parts which receive nerves from below the wound.

The brain being the seat of the mind, its sound and perfect state is of the utmost importance in the exercise of the intellectual faculties.

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If, therefore, the brain of an individual be preternaturally soft, or too firm and hard, or specifically too light, or proportionately too small; or if it be in any manner compressed, or shaken; or if acrimonious humours should settle on it; or if too great a portion of blood should flow to the head; in all such cases, and indeed an infinite variety of others, some of which are, and perhaps ever will remain unknown, the intellectual faculty will partake more or less of the disorder. Thus the power of imagination or fancy, it is well known, is sometimes so much increased, that the individual is either in part, or entirely deprived of the faculty of judgment. Such for instance is the case in delirious persons; who are then only called maniacs, when a total privation of their reasoning faculties is evident. In idiots, or stupid people, however, the mental disease arises chiefly from their incapacity of comprehending, and properly arranging ideas: the faculty of memory is, in such subjects, remarkably deficient.

The causes of these unfortunate derangements of the human mind, when not derived from original physical defect, or incapacity, are inordinate passions, especially those which are attended with a great dissipation of strength; debauchery of every kind, whether mental or physical; such as intense application to study, or a long-continued application of the mind to one subject, to the exclusion of that variety on which sound health, and more especially the health of the mind, very essentially depends; excessive eating and drinking; an irregular mode of life, and also sudden changes of climate, air, and aliment. See MANIA, and HYPOCHONDRIASIS.

BRAIN, INFLAMMATION OF THE. The signs of an impending inflammation of the brain, or phrenzy, are immoderate and continual watchings; or, if any sleep be obtained, it is disturbed with dreams, and gives no refreshment: acute and lasting pains in the hind part of the head and neck; little thirst; a great and slow respiration, as if proceeding from the bottom of the breast;

the pulse sometimes small and slow, sometimes quick and frequent; a suppression of urine, and forgetfulness. When the disease is fully formed, the veins of the head swell, and the temporal arteries throb much; the eyes are fixed, sparkle, and have a fierce aspect; the speech is incoherent, and the patient behaves very roughly to the by-standers, with furious attempts to get out of bed. The tongue is dry, rough, yellow, or black. A coldness of the external parts, a proneness to anger; chattering of the teeth, and palling of the bed-clothes.

This disease is more common in hot than temperate climates: but it may arise in the latter from external violence, from severe blows or bruises upon the head; night-watching, hard drinking; strong passions of grief, anger, or anxiety; exposure to the heat of the sun during sleep, with the head uncovered, &c.

As this is a disease which, when neglected, is often fatal in a few days, the best advice should as soon as possible be obtained.

Large and repeated bleedings by the lancet, or by leeches, are necessary; and these should be taken from vessels as near as possible to the part affected. The body must be kept open by clysters; the legs should be bathed in warm water. The patient should be kept as quiet as possible, and free from strong light; cold air is, however, of great advantage; so, also, are cool applications applied to the whole head, such as vinegar; or cloths dipped in the following solution: two ounces of nitre, one ounce of sal ammoniac, dissolved in five pints of water, and half a pint of strong vinegar. The patient may also drink a table spoonful of this mixture every hour.

The food, throughout the disease, should consist of decoctions of farinaceous seeds, such as linseed, or pearl barley in water, acidulated with lemon juice, or other vegetable acids. Every thing in the shape of stimulants must be carefully avoided.

BRAIN, DROPSY OF IN HORSES. This disease does not often occur in

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horses or cows, but sheep are more liable to it than other quadrupeds.

The symptoms of this disorder in horses are variable. In some cases there is a considerable dulness and heaviness about the head, the pulse not being much affected; but there is a loss of appetite, and the animals appear as if suffering great pain in the head, generally keeping it lower than the manger; in others the animal appears to be free from pain, except when suddenly put into brisk motion, when he falls down in violent spasms, which last a few minutes.

Diuretics and mercury, promise the best success in this disease; a strong mercurial purgative, in an early stage of the complaint, assisted by a blister to the head, and a rowel between the branches of the under jaw, may remove the disorder; but at any later period there does not appear any chance of cure.

There are two kinds of this complaint incident to SHEEP. The first consists of an accumulation of water in the ventricles of the brain, which is considered to be incurable; the other, which is most common, arises from *animalculæ*, called hydatides. In this case the water is contained in cysts, or bags unconnected with the brain, on which, however, if not prevented, it acts fatally by pressure. The sheep in this disease frequently starts, looks giddy and confused, as if at a loss what to do; it retires from the flock, and sometimes exhibits a very affecting spectacle of misery.

The best method of cure, is to thrust a piece of wire, or knitting-needle, up the nostrils, and forcing it through the skull into the brain, by which means the cyst will be perforated, and the water discharged.

Brain, Inflammation of in horses.
See STAGGERS.

BRAMBLE, or *Rubus*, in botany, a genus of which there are thirty-two species; chiefly natives of Europe and America: seven are common to the woods, hedges, or mountains of our own country. Of these some are shrubby, others herbaceous. The following are cultivated:

The *Idæus*. Raspberry, a well known

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shrub; fruit grateful to the smell and taste. Numerous varieties found wild in our own hedges. See RASPBERRY.

The *Occidentalis*. Virginian raspberry, higher than the preceding, flowers ornamental; fruit a dark black, when ripe little flavour. It varies with a red fruit, more acid and pleasant than the European raspberry.

The *Odoratus*. Flowering raspberry; root perennial, creeping; stalk six or seven feet high; petals largeish, light purple; fruit rarely produced here, but the common raspberry of North America, not so pleasant as the European.

The *fruticosus*. Common bramble. Blackberry. Well known to every one. The cultivated variety is the double-flowering, or double-blossomed bramble, which is highly ornamental in our gardens. See BLACKBERRY.

The *trispidus*. Bristly bramble: stem and petioles very rough, with stiff lanceolate bristles. A native of Canada.

The *cæsius*. Dewberry. Fruit black, with a bright blue tinge, or bloom, composed of a few large grains: flavour agreeably acid, without the faint taste of *fruticosus*. A native of our own woods and hedges.

The *arcticus*. Dwarf crimson bramble. Stems from a hand to a span in height; flowers solitary, deep rose-coloured; fruit purple, smell fragrant: found on the stony hills of our own country.

The *chamæmorus*. Cloud-berry, mountain bramble. Elegant, with a creeping root, stem hardly a foot high; leaves mallow-like; flowers white; berry of a tawny, or dull orange colour; a native of our own mountains.

The two last are best propagated by seeds; the rest by cuttings, suckers, layers, and divisions of the roots.

The common bramble being of quick growth, may be usefully employed for enclosures; the usual method of planting it, is in two rows upon the bank, the lower of bramble, and the upper of white thorn.

The leaves of this bramble, it is said, afford several colours in dyeing.

BRAN is the husks or shells of wheat, which are separated from the

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farinaceous part, or flour, by means of a sieve, or a boulting machine.

Bran is used for a variety of purposes : it is given as an article of food to pigs, poultry, dogs, and horses. It also causes the brown colour in the bread, commonly baked by country farmers ; the dyers reckon bran among the non-colouring drugs, and use it for making what they call the sour waters, with which they prepare their several dyes.

Bran, notwithstanding the eulogies which have been written upon it, from time to time, is an article of food assuredly of low estimation. Those who have found it nutritious, have been most probably deceived by some remains of the farinaceous part of the wheat still adhering to it.

One advantage of some importance this article unquestionably possesses : brown bread which is made from flour, having a large quantity of bran, will keep good much longer than white bread.

BRANDY, a colourless, slightly opaque, and milky fluid, of a hot and penetrating taste, and a strong and agreeable smell when first distilled from the wine : for brandy is distilled from wines of various kinds, and, properly speaking, from no other fermented liquor.

Brandy consists of water, alcohol, and a small portion of an essential oil, to which its peculiar taste is owing. The brandy made in France, particularly in Cognac, Bourdeaux, and Rochelle, is esteemed the best. The yellow tint which it has, as it is sold in the shops, is obtained, perhaps, either by its extracting the colouring matter from the casks in which it is kept ; or, more probably, it is coloured specifically by the French themselves, or by the first importers of it.

The utility of brandy in medicine is very considerable ; not only because it contains a large portion of alcohol, but because the essential oil, or some other resinous matter with which it is impregnated, is peculiarly grateful to the stomach, when used upon proper occasions, and in proper doses. Indeed, we

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have no hesitation in saying, that brandy will generally be found the most wholesome of all distilled spirits, subject, however, to exceptions on particular occasions. But from its pleasant taste, and exhilarating property, it is too often taken to excess. When taken internally, it gives energy to the animal functions ; is a powerful stimulant cordial, and antispasmodic ; and its utility with camphor in gangrenous affections is very great.

Brandy has been imitated by adding spirit of nitrous æther, to common malt spirits, as well as in some other ways ; but we think them poor imitations, and that they are readily detected by even indifferent judges of this spirit : these spurious sorts will be found by no means so valuable as medicines, nor so agreeable to the stomach when they are drunk as exhilarating liquors.

The dose of brandy, is from one to two ounces for an adult, mixed with four ounces of water ; and it is not in general wise, or expedient, to take more at one time. But on particular occasions it may be given, if not in large doses, yet very often, and without dilution. We have known thirty ounces taken in less than twenty-four hours, in cases of extreme debility, and which have unquestionably preserved the patient's life.

We must protest, notwithstanding, against the habitual use of this valuable liquor, and would strongly impress upon our readers the necessity of using it at all times with caution, and only when imperious necessity requires. *Brandy is a good medicine, but a bad constant beverage for persons in health.*

Brandy is also used to derote certain compound liquors, of which brandy is the basis ; such are raspberry-brandy, cherry-brandy, &c. See SPIRITS OF WINE.

BRASS is a factitious yellow metal, consisting of copper and zinc. The metals are usually united, by mixing granulated copper with calamine (the ore of zinc,) and charcoal : the mixture is exposed to a heat sufficient to reduce the calamine, and melt the alloy, which is then cast into plates. The relative

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proportions of the two metals vary in the different kinds of brass; there is usually from 12 to 18 per cent of zinc.

Brass may also be formed by an union of copper and zinc in their metallic state; it is only requisite to melt the two metals together, in the proportion of a third or fourth part of zinc, to one of copper, and, while in fusion, to keep the mixture stirring for some time.

It is by the direct mixture of the two metals, that other gold-like alloys are formed, such as pinchbeck, prince's metal, Mannheim gold, &c., which differ from brass in the proportion of zinc which they contain, and in being less malleable. In pinchbeck the proportion of zinc amounts to about 25 per cent.

Brass is a most useful compound. It is more fusible than copper, and not so apt to tarnish: it is malleable when cold, but not when heated; and so ductile, that it may be drawn out into very thin wire: its density is greater than the mean of its constituents. Its uses in various arts and manufactures are so extensive, and so well known, that it is unnecessary to specify them.

BRASS COLOUR is prepared by colourmen and braziers to imitate brass. There are two sorts: the red, is bronze mixed with red ochre, finely pulverised; the yellow, or gilt, is made of copper filings, the smallest and brightest which can be found. They are both used with varnish.

BRAXY, or SICKNESS, is a complaint very common among sheep: it is of three kinds, the watery, the costive, and the dry braxy. The *watery* arises from the retention of urine, caused by feeding too freely on succulent diuretic food, and resting too long in their lairs in the morning. The disease may be prevented, by avoiding too free a use of such food, and by moving them from their lairs, or pens, early in the morning, in order to encourage them to pass their urine. All diuretic medicines are of course highly improper.

The *costive* braxy is produced by eating hard dry food, drinking cold water when the body is overheated, or by the animal's being plunged into

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cold water while in that state; or if it be suddenly drenched with rain, or chilled with snow. A dose of salts about two or three ounces, glysters, and bleeding, are the proper remedies.

The *dry* braxy is an inflammatory affection, particularly of the bowels, for which bleeding, castor oil, and glysters, are suitable remedies.

BREAD, a light, porous, spongy substance, prepared by fermentation, and baking from the flour of certain farinaceous seeds, especially wheat, and is the principal sustenance of man in the temperate regions of the northern hemisphere.

Upon an analysis of, and experiments on different grains, and other vegetables used for the purposes of fermented bread, it has been found that those only make the best bread which contain, besides starch, and saccharine matter, a considerable quantity of gluten. The gluten appears to retain for some time a portion of the fixed air, or carbonic acid, which is disengaged during the fermentation of the dough, as well as during the baking of the bread; so that, when the process of baking is completed, a number of little cells are evidently formed in the bread by the gluten, in conjunction with the other ingredients of the flour, chiefly starch; the more numerous and large these cells are, the more perfectly is the bread made, and rendered at the same time most suitable for digestion. So that without a considerable proportion of gluten no good bread can be made. Hence it is that potatoes alone will not make good bread; but if gluten be added to them in sufficient quantity, and the usual mode of fermentation adopted, good bread will be the result.

These experiments have indisputably proved that, hitherto, no grain, or other vegetable matter, has been discovered which contains gluten in so large a proportion as wheat; of course wheat is the grain best adapted for bread. The next best grain for the purpose, and for the same reason, is rye. See **FOOD**.

Wheat being then the best grain for

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making bread, it may be necessary to observe here, that although it is cultivated, perhaps, over a greater extent of the globe than any other plant, and, like man, seems to adapt itself to almost every climate, excellent crops having been raised in lat. 60° north, and its being cultivated also in the East Indies, considerably within the limits of the torrid zone, yet it is a truth, that its quality improves considerably as we advance south. The wheat of Essex and Kent, is more valuable than the wheat raised in Scotland. French wheat is superior to English; and Italian superior to the French; and, perhaps, the best wheat of all is raised in Barbary and Egypt: of one of which last-named countries it might have been originally the native.

By the experiments of Sir Humphry Davy, it appears that the proportion of *gluten* in 1000 parts of wheat, from the county of Middlesex was 190; from thin-skinned Sicilian wheat 239; from Polish wheat 200; from North American wheat 225; and of *mucilage*, or *starch*, 765, 722, 750, and 730 parts, from the same respectively. Sir Humphry makes no mention of sugar in these experiments.

By the same experiments, rye of Yorkshire was found to contain in 1000 parts, 645 parts of *mucilage*, or *starch*, and 109 parts of *gluten*, and 38 parts of saccharine matter.

Sugar is by far the smallest in proportion of all the constituents of wheat flour. The most distinguishing property of it, however, is, that when dissolved in water, it ferments of itself, without the addition of any yeast; whereas, common sugar does not undergo that process, unless yeast be mixed with its aqueous solution. Hence the reason why the dough of wheat flour ferments, and is converted into leaven. This fermentation does not take place if the saccharine matter be washed out of it by water. The fermentation of wheat flour is at first confined to the saccharine matter. It first undergoes the vinous fermentation; here the process if possible ought to be

stopped; but as this is usually not possible, the acetous fermentation commences, and vinegar is formed. See **FERMENTATION**.

To furnish an idea of the proportions of the constituents of good wheat, we here give the result of an analysis of Mr. EDLINS. He separated one pound avoirdupoise of wheat, into the following ingredients:

Bran.....	3 oz.	0 dr.
Starch.....	10	0
Gluten.....	0	12
Sugar.....	0	4
Loss	2	0
	16	

In this case it appears that the *gluten* amounted to $\frac{1}{11}$ of the whole flour, the *sugar* was $\frac{1}{11}$ th part, the *bran* $\frac{1}{11}$ th, and the *starch* almost two thirds of the whole flour.

We have stated this analysis, and the preceding proportions from Sir Humphry Davy's table, rather to give our readers an idea of the different ingredients in wheat flour, than as data to be relied upon for exactness: indeed, the probability is, that the proportions of the different ingredients in wheat, will be found to be continually varying, owing to the season, the climate, &c.; but that *starch*, *gluten*, and *sugar*, constitute together the valuable qualities of wheat there can be no doubt.

Flour, whether of wheat or rye, ought not to be used immediately from the mill; but it should be kept in a dry place for several weeks, and stirred every day in summer; and at least every other day in colder seasons.

By the mealmen in the neighbourhood of London, wheat is divided into no less than seven distinct kinds of flour. The following are the average proportions of these obtained from a quarter of wheat:

Fine flour.....	5 bushels, 3 pecks.
Seconds	0
Fine middlings	0
Coarse, ditto..	0
Bran.....	3
Twenty-penny	3
Pollard	2
	14
	2,5

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Thus we see wheat almost doubles its bulk by being ground into flour.

During the bolting of the flour, there is a fine white gritty substance called *sharps* obtained. It constitutes the centre and finest part of the grain of wheat. This is partly sold to the biscuit-bakers, and is employed in baking the finest kind of sea-biscuit. It is partly ground again, and constitutes the finest and most valuable kind of flour.

A sack of flour weighs 280lbs. or five bushels, and is supposed capable of being baked into 80 loaves, in the Act of Parliament regulating the assize of bread: according to this estimate $\frac{1}{4}$ th of the loaf consists of water and salt, the remaining $\frac{3}{4}$ ths of flour. But the fact is, that the number of the quarter loaves which can be made from a sack of flour, depends entirely on the goodness of it. Good flour requires more water than bad, and old flour than new. Sometimes 82, 83, or even 86 loaves may be made out of a sack; sometimes scarcely 80.

The addition of the yeast of beer to make the dough swell, is an improvement of the original practice of baking. *Leaven* was used by the ancients for this purpose. Indeed, at the present day, ships which go on long voyages, East Indiamen for instance, employ the leaven of the previous day for the production of hot rolls, &c. on the next, throughout the voyage. The method of baking with leaven is this: a quantity of flour is made up into dough with water; this dough being set in a warm place, is left for about thirty-six hours; during which period it swells considerably, and becomes of a thinner consistency. In short, it undergoes a species of fermentation. It also acquires by this process a peculiar smell, and a disagreeable, sour taste, and is the substance known by the name of *leaten*. If this substance be mixed with a quantity of fresh dough, it occasions the whole to undergo a speedy fermentation, and to swell precisely in the same manner as dough mixed with yeast. Bread skilfully baked in this manner, is not inferior to yeast bread; but when un-

skilfully managed, it has a sour taste, and contains a quantity of acetic acid. According to Mr. Edlins, a pound of flour, when converted into leaven, contains as much acetic acid as requires 40 grains of carbonate of potash to neutralize it. In this way, the utility of potash in bread may be known and estimated. Upon the whole, we apprehend that acetate of potash is less injurious to the constitution than alum, which will be spoken of hereafter; and the carbonic acid gas disengaged from the potash, must necessarily contribute to the lightness of the bread. We believe, too, that potash is a more common ingredient in the bread of the metropolis than most persons suppose; but although we do disapprove of the practice, where yeast can be so readily obtained, yet we do not think the public need be under any great apprehensions from the use of this article. Another of the alkalies, viz. carbonate of ammonia, is, we are informed, occasionally used in the manufacture of bread. This substance is the least injurious of all; because, in all probability, the greater part of it is dissipated in the baking. However, when the flour is good, and yeast can be obtained, none of these ingredients need enter into the composition of bread.

We shall here give a short account of baking, as it is most advantageously practised both in the large, and in the small way.

In the large way it will be necessary that the bakehouse be sufficiently spacious, that there is a dresser, a kneading trough furnished with a sluice, and a copper for warming water. One side of the room will be occupied by the oven. The temperature to which the oven must be raised to fit it for baking bread is 450°. The bakers do not usually employ a thermometer; but they reckon the oven sufficiently heated when flour thrown on the floor of it becomes black very soon without taking fire.

To prepare the flour for baking, a sack of it, for example, is poured into the kneading trough, and then sifted through a fine wire sieve, which makes it lie very

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light, and serves to separate any impurities with which the flour may be mixed. Four pounds and a half of salt are put into a large tub called the *seasoning tub*, and a pailful of hot water. When this solution is cooled down to the temperature of 84°, three pints of yeast are added; the whole is to be well mixed together, strained through a sieve, emptied into a hole in the flour, and mixed up with a requisite portion to the consistence of a thick batter. Some dry flour is then to be sprinkled over the top, and it is covered up with cloths. This is called *setting quarter-sponge*.

In this situation it is left about three hours. It gradually swells and breaks through the dry flour scattered on its surface. An additional pailful of warm water is now added, and the dough is made up into a paste as before; the whole is then covered up. This is called *setting half-sponge*. In this situation it is left about five hours.

Three pailfuls of warm water are now added; the whole is intimately blended and kneaded for upwards of an hour. The dough is then cut in pieces with a knife, thrown over the sluice board, and penned to one side of the trough. Some dry flour is sprinkled over it, and it is left in this state for four hours. It is then kneaded again for half an hour. The dough is now cut into pieces and weighed, in order to furnish the requisite quantity for each loaf: four pounds fifteen ounces for every quarter loaf. They are then of course moulded into loaves, the method of doing which must be learnt by ocular inspection, or by experience. The loaves are left in the oven about two hours and a half.

There is a practice with some bakers of putting alum in the bread, in small quantities for the most part; but as alum cannot add to the nutritive qualities of bread, and as, besides, it is injurious to some habits by inducing costiveness, it should not be used: we are not, however, of opinion that it is so injurious generally, as some persons have supposed.

The *yeast* which is employed for the making of bread, is usually obtained

from the brewers, at least in London. But the following method will answer every purpose of yeast; and indeed is much better than brewer's yeast, because it is clearer, and free from the hop flavour which sometimes injures the yeast of the brewer:

Add ten pounds of flour to two gallons of boiling water: stir them very well into a paste. Let the mixture stand for seven hours, and then add about a quart of yeast. In about six or eight hours, this mixture, if kept in a warm place, will have fermented, and produced as much yeast as will bake a hundred and twenty quartern loaves.

Having stated the most approved and simple method of making bread in the large way, we now proceed to detail the best method of making it in the small way.

Take of fine flour six pounds; of water moderately warm, but not hot, two pints and a half; of liquid yeast eight spoonfuls; and of salt two ounces. Put about a pint of warm water to the yeast, and mix it well by beating them together with a whisk. Let the salt be put to the remaining part of the water, and stirred till it is completely dissolved. Then put both quantities of the fluid gradually to the flour, and knead the mass well till the whole is properly mixed. The dough thus made must stand four or five hours, that is, till the exact moment of its having fully risen, and before it be sensibly perceived to fall. It is then to be formed into loaves, and immediately placed in the oven. To bake it properly, the first care is to see that the oven be sufficiently heated, yet not to such a degree as to burn the crust. If a green vegetable turns black when put in, the oven will scorch the bread; in which case it must stand open till the heat is somewhat abated. The mouth of the oven must be well closed, till the bread has risen to its full height, which will not take place in less than two or three hours. After this, but not before, the oven may be opened for the purpose of viewing the bread. If the mouth of the oven be not kept closely stopped, till

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the bread has fully risen, it will flatten and become heavy. When properly managed, the above-mentioned ingredients will have lost about one pound two ounces in weight ; so that a baked loaf of this kind should weigh seven pounds, twelve ounces. See OVEN.

The bakers of Great Britain are restricted by Act of Parliament to bake only three kinds of bread, namely, *wheaten*, *standard wheaten*, and *household*. The first must be marked with a W. ; the second with S. W. ; and the third with H. ; and the baker who neglects to mark them in this manner is liable to a penalty. The *wheaten* loaf is made of the finest flour ; the *standard wheaten* of the white flour mixed together ; and the *household* of the coarser flour. Private persons may of course bake bread for their own consumption of any quality they please.

The loaves baked are usually peck loaves, half peck, and quartern loaves ; the weight of which, provided they be weighed within forty-eight hours of the time of baking, must be as follows.

lb. oz. dr. Avoirdupois.

Peck loaf 17 6 0

Half peck 8 11 0

Quartern 4 5 8

Before these loaves are put into the oven they weigh

lb. oz.

Peck loaf 19 12

Half peck 9 14

Quartern 4 15

So that the average loss of the quartern loaf in baking is $9\frac{1}{2}$ ounces, or not quite one-seventh of its weight.

The price of bread was till lately regulated in London by the magistrates, according to the returns of the prices of corn ; but it was found that such interference injured, instead of improved, the quality of the bread. The assize of bread, as far as it affects the metropolis and its environs, has therefore been taken off ; but the good effects expected have not yet resulted from this judicious measure. The spirit of monopoly still exists ; and it is said that the bakers have a weekly meeting, and settle the assize privately in the same manner as it was before done publicly by

the Lord Mayor and Aldermen of London. To remedy this evil we know of no expedient but time. The bakers do not, however, from every account, appear to be the origin of the combination ; but persons of larger capital, the corn-dealers and mealmen, at whose mercy most of the bakers are.

Some ingenious bakers in London, in order to make up for the smallness of their profits, hit upon a plan of mixing potatoes with their flour ; and we are credibly informed that not less than 300 tons of potatoes are consumed for this purpose every week. The bread so prepared is certainly not unwholesome ; although it cannot be so nutritious as bread made wholly of wheat, for the reasons before stated. But the grievance is that the same price is taken for the potatoe loaf as for a loaf of the finest wheaten flour, though it must cost the baker less. But after all, we very much doubt whether potatoes can be employed, as an article of food, in a more economical way than they now are by mere boiling. See POTATOE.

Bread made from wheat is very nourishing, not merely on account of the large quantity of starch which it contains, but in consequence of its having so much *gluten*, which it is natural to suppose will readily assimilate with the animal fluids. The process of baking with fermented dough appears therefore to be necessary, principally to discharge a quantity of gaseous matter which is invariably disengaged in the stomach, either from imperfectly fermented bread, or flour imperfectly boiled : for it is well known that both these when eaten disagree more or less with most stomachs ; and most of all with those whose digestion is bad, the hypochondriacal and nervous in particular. For the same reason newly-baked bread is bad ; the gas produced by the fermentation not being, for some hours after baking, completely extricated from it. For this reason too it is that bread is rendered more suitable to the stomach, by allowing it to be at least twenty-four hours old, and afterwards by the process of toasting. Bread somewhat stale there-

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fore deserves in every respect the preference to that which is newly baked. Persons troubled with flatulency, acidities, cramp in the stomach, or indeed any indigestion, should religiously abstain from new bread, and particularly hot rolls.

Upon the whole, relative to the nutritive quality of wheaten bread, we apprehend that no other vegetable contains so much in the same bulk; and, notwithstanding many substitutes have been recommended for it, (*see the next article,*) we have neither hope nor expectation that any vegetable will ever be found equal in nutritive powers to wheat: the almost universality of its growth and use, except in very hot climates, seem to point it out as the most proper food for man.

Before we close this long, but assuredly important article, we would say a word or two relative to the *whiteness* of bread. The great advantage of eating pure and genuine bread must be obvious. Every part of the wheat which may be called flour really makes the best bread, that being the best which is of most general use, and so fine as to contain no husks of the grain. But the delusion by which so many persons are misled to think that even the whole flour is not good enough for them, obliges them to pay more than they need to do to gratify a fanciful appetite. Had it not been for the custom of eating whiter bread than the whole of the flour will make, the miller and the baker would not have employed all their art to render the bread as white as possible, and make the consumer pay for this artificial whiteness.

One fact of importance to be known concerning bread is, that the brown home-baked bread of our farmers will keep much longer good than the white bread of the citizen.

BREAD, FRENCH. The process of making this bread is as follows: Take half a bushel of the best wheaten flour, and dilute one pint of good yeast with three quarts of warm water; mix the whole properly, and cover it over with flannel till the sponge be formed. After

the dough has sufficiently risen, six quarts of lukewarm skimmed milk, and one pound of salt, are to be worked in with the fingers till the sponge be weak and *ropy*; some add also two ounces of butter: when it must again be covered and kept warm. The oven being now made very hot, and the paste moulded into bricks or rolls, they are to be put in expeditiously; the former requiring one hour and a half; but the latter only half an hour. As soon as the bread is baked it must be drawn; and, if burnt, the black crust should be rasped.

BREAD, SUBSTITUTES FOR. Various substances have been used as substitutes for bread, particularly in times of scarcity; and indeed, from what we have said in the preceding article, it is evident that the use of them will be in general confined to times when there is a deficiency of the produce of wheat: but barley, rye, and oats are, at the present time, used alone, instead of wheat, for bread, in various parts of the united kingdom.

Turnip bread is made in the following manner: put the turnips into a kettle over a slow fire, till they become soft; they are then to be taken out, squeezed, and drained as dry as possible, and afterwards mashed, and mixed with an equal weight of flour kneaded with yeast, and a little warm water.

Another method is to wash clean, pare, and afterwards boil a number of turnips till they become soft enough to mash; press the greater part of the water out of them, and then mix them with an equal weight of wheat meal; make the dough in the usual manner with yeast, &c.

Carrots and *Parsnips* may be treated in a similar manner with turnips.

Potatoe bread may be thus made: choose the large mealy sort, boil them as for eating, then peel and mash them very fine without adding any water. Two parts of wheat flour are to be added to one of potatoes, with a proper quantity of salt, and a little more yeast than usual. The whole mass is to be kneaded into dough, and allowed to stand a proper time to rise and ferment before it is put into the oven

Rice bread is made by taking three-

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fourths of wheaten flour, and one-fourth of rice. The rice should be well boiled, the water squeezed out, (which may be used as starch for linen) and the mass should then be mixed with the flour. It is then to be made in the same manner as common bread.

Rice has also been tried in the same proportion with barley, and makes good bread for labouring people.

The following seeds and roots have been occasionally used for bread :

The farinaceous seeds of wheat-grass ; of millet ; of common buck-wheat ; of Siberian buck-wheat ; of wild fescue grass ; of maize, or Indian corn ; of rice ; of Guinea corn, or white round-seeded Indian millet ; of Canary grass ; of rough dog's-tail grass ; of water zinzany ; of upright sea lime-grass ; of sea-reed, marram, helme, or sea mat-weed.

The following, however, deserve a decided preference over many of the preceding : water caltrops ; pulse of various kinds, such as peas, beans, and the seeds of the common vetch ; of white goose foot ; of common wild orage ; of rocket ; of sorrel ; of the different species of the dock ; of the yellow and white water lily ; of the corn spurrey ; of the spinage ; of the common gormwell ; of the knot-grass ; of the beech-nut ; of the husks of linseed, &c.

The farinaceous roots of the common and yellow Bethlehem star ; of the yellow asphodel ; of the wake robin, after being properly dried and washed ; of the pile wort, or lesser celandine ; of the common drop wort ; of the meadow sweet ; of the white bryony ; of the turnip-rooted cabbage ; of the great bistort ; of the small, Welsh, or Alpine bistort ; of the common orobus, or heath pea ; of the tuberous vetch ; of the common reed ; of the sweet smelling and common Solomon's seal ; of the common corn flag ; of the salt marsh club-rush, &c. &c.

The fibrous and less juicy roots : of couch-grass, or creeping wheat-grass ; of the clown's, or marsh wound-wort ; of the marsh marygold, or meadow bouts ; of the silver-weed, or wild tansy ; of the sea seg, &c.

BREAD, ADULTERATION OF. We mentioned under the article bread the different drugs which are used as ingredients in the manufacture of bread ; and also that potatoes enter pretty largely into the composition of this necessary of life ; but we have reason to believe that *bean* flour is an article which is well-known to the bakers, and that, from its possessing a considerable portion of gluten (about one-tenth of its whole quantity) it answers the baker's purpose even better than potatoes ; but it is apt to cause the bread, after being cut, to dry and crack very soon. If the bean flour be in large proportion, it may be discovered by the smell on toasting a slice of the bread before the fire. The flour of *peas* we know not how to detect ; but we suspect it forms no inconsiderable ingredient in baker's bread.

Alum, in bread, has been considered as one lamentable source of the diseases of children, causing obstructions in the bowels, &c. ; this, however, admits of considerable doubt. It requires no chemical skill to detect its presence, for on macerating a small piece of the crumb of new-baked bread in cold water, sufficient to dissolve it, the taste of the latter, if alum has been used by the baker, will acquire a sweetish astringency. Or a heated knife may be thrust into a loaf before it has grown cold, and if it be free from alum scarcely any alteration will be visible on the blade ; but, in the contrary case, its surface, after being allowed to cool, will appear slightly covered by aluminous incrustation. It ought, however, to be remarked, that a very small proportion of alum, such as a few grains to a quarter loaf, cannot be productive of any serious effects ; indeed, in some constitutions, such medicated bread may be even advantageous. But, however, such addition to a common article of food, to say the least of it, is highly improper, and ought not to be used by bakers, who merely consider it as conducive to their profit, and who care not for the health of those who consume such adulterated bread.

BREAKFAST

BREAD-FRUIT-TREE, or *Arto carpus*, a genus of plants having two species. The *incisa*, the true and valuable bread-fruit-tree of Otaheite, and the adjoining islands, first brought into general notice by Captain Cook. The tree is of the height and proportion of a middle-sized oak; the leaves are often a foot and a half long, oblong-shaped, and in colour, consistence, and sinuosity, resembling those of the fig-tree, and exuding a milky juice upon fracture. The fruit is about the size and shape of a new-born child's head, covered with a thick reticulate skin, and containing a core in its centre. The eatable part lies between the skin and the core, white as snow, and of the consistence of new bread. It is prepared for food, by being divided into three or four parts, and then roasted: its taste is sweetish, but otherwise insipid. There are various other ways of cooking it. The name among the natives is *Mahie*.

The *integrifolia*, called by the natives jocahee, and by our own merchants Jack-tree. It is a native of the East Indies, but its fruit is small, and in much less esteem than that of the mahie.

The bread-fruit tree is said to afford much nourishment, and, therefore, proper for labouring people.

The juice which issues from the trunk, when boiled with cocoa-nut oil, makes a very strong bird-lime.

This tree can only be propagated by suckers, or layers.

BREAKFAST, the first meal of the day. Many persons who have not in general ill-health, frequently make a scanty breakfast; and in order to excite an appetite, have recourse to a variety of dishes for this purpose: hence it is not uncommon to see at the tables of persons who can afford to gratify their inclinations in this way, not only coffee and tea, with buttered toast, but eggs, hot rolls, cold ham, and other animal food of different kinds, and also dried fish. Nothing can be more mischievous than such an admixture of dishes. If the reader be sincerely desirous of promoting his health, and determine to sacrifice his morbid inclinations to ob-

tain, or to retain, this desirable blessing, he will assuredly find, that the more simple his food is, the more likely it is to be conducive to this end. That, in order to insure a wholesome appetite to his breakfast, he must avoid above all, hot and heavy suppers; and if he rise in the summer at six, and in the winter at eight o'clock in the morning, hours surely late enough, even for the luxurious, and engage in some active pursuit, either of body or mind, or both, for one hour or more, previously to sitting down to a breakfast, he will not often fail to have an appetite for one kind of food, and one kind of liquid, and that too which will be much more satisfactory and healthful than an assemblage of luxurious stimulants, which have always, more or less, mischief in their train. There can, certainly, be no objection whatever to the breakfast being a hearty one, provided it be the result of a natural appetite; although the studious and sedentary, as also valetudinarians, ought to avoid all large and hearty meals.

Of what the breakfast ought to consist, must depend upon a variety of circumstances: persons in high health, and the young and robust, can vary their food almost at pleasure; and generally with impunity; but persons whose habits are more fixed, and who have arrived at the meridian of life, cannot often use so much latitude in this respect, without inconvenience. The usual breakfast for a numerous portion of mankind in Great Britain, as we all know, is tea and toast in the winter, and bread and butter with tea in the summer. It has been supposed by some physiologists, that the use of tea is productive of a variety of nervous disorders; and if it have, of which we very much doubt, the cause is, we think, to be attributed rather to the hot water, than to the tea, particularly *black tea*; which, as far as we know, contains no ingredient prejudicial to health; on the contrary, from its astringency, it ought rather to be, and we believe that it is, beneficial to the stomach and general health. To

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this infusion, therefore, as a breakfast, we see no objection; nor to the addition of milk, particularly the milk of the metropolis, which is, indeed, little else besides water. But we do not think that thick cream is by any means desirable with tea, particularly if the tea be drunk with sugar. Coffee, we know, is preferred by many persons, but upon the whole, we consider tea by far the best beverage. Chocolate, as a common article of food for breakfast, is too oleous. Hot rolls, and hot bread, are both highly improper.

The breakfast of persons in health, who take much muscular exercise, such as the labourer in the open air, the husbandman, &c., may be almost any food for which they have an inclination. Bread and cheese, with an onion, or a small portion of garlic as a condiment, are, to a very large portion of society, not only a wholesome, but a nutritious meal, with the addition of one pint of ale, cider, or similar liquor. The stimulus of muscular exertion, is almost omnipotent as a promoter of health and the powers of digestion. It would be, indeed, of great importance to the upper classes of society, to study and adopt some of those habits of the lower classes which insure to them their freedom from dyspepsia and the horrors of ENNUI. See EXERCISE, and BUTTER.

Relative to the breakfast for valetudinarians, and those who are troubled with dyspeptic complaints, instead of butter, it would be useful to eat a slice of cold roast beef and bread, with mustard, or cold roast mutton, avoiding in both instances the fat. A change of this kind for a month or more, when the customary breakfast has not sat easily on the stomach, will be found of great advantage, and frequently afford relief from the distressing acidities and flatulence under which many persons labour. A change too from tea to a light and agreeable drink made from weak cocoa, and drunk lukewarm, is not undeserving their attention. Ginger tea may also be taken as a variety: but most medicated teas soon lose their stimulating power—a month is perhaps as

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long as it would be advisable to continue any one of them. Coffee may suit some valetudinarians; but it is injurious to many stomachs on account of the roasted oil which it contains; the admixture of cream, or milk, in this case, will certainly not improve its qualities.

BREAKING, or **BREAKING IN**, in horsemanship, a well-known species of discipline exercised on colts for the purpose of, rendering them serviceable to man.

The most proper period for breaking in a saddle colt is the usual one, when he is three years old. In the common mode of performing this operation, there is very little variation since Baret's days; or rather it may be said, we have universally adopted his improved method. A head-stall is put upon the colt, and a caversane over his nose, with reins. He is saddled, then led forth with a long rein, and in due time lunged, or led round a ring, upon some soft ground. As soon as he has become tolerably quiet, he is mounted, a proper mouth and carriage given, and his paces taught. When sufficiently instructed, he ought, (in general) to be dismissed until the following spring: an early period for serious business.

There are some who choose to defer breaking in their colts until they are four years old, for which they often find just cause of repentance, in the strength and stubbornness of the horse: a better practice by far is, to accustom colts to the halter and the bitt, immediately upon weaning them: and some have recommended that during their growth, till three years old, they should be accustomed to a light saddle, and be occasionally mounted, but by no means be made to carry any heavy burthens, or to go long or tiresome journeys.

BREAKING-DOWN, an accident which often happens to the horse during violent exertion, as in racing. In this casualty, the suspensory ligament of the leg is, sometimes, said to be ruptured; but the injury is more commonly a severe strain of the sheath of the flexor tendon, or back-sinew.

A perfect cure in this case can hard-

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ly be expected ; though the horse may be rendered serviceable for the purposes of agriculture. The ends of the ligament, if ruptured, must be brought as near together as can be, in which situation they must be kept till a re-union has taken place. This will be effected with difficulty : a high-heeled shoe would perhaps contribute materially towards it. The bandage employed on the occasion should be kept constantly wet with a solution of acetate of lead, in cold water. When a re-union has taken place, the heels of the shoe should be gradually reduced.

BREAM, or *Cyprinus brema*, a species of the carp. It inhabits the lakes and still rivers of Europe and the Caspian Sea : from two to two and a half feet long ; it is found in shoals : its flesh is insipid. See **CARP**.

BREAST, in anatomy, the fore part of the chest or thorax, which is composed of many bones, namely, the *sternum*, or breast-bone in front, and twelve ribs on each side. The breast-bone is, in young subjects, composed of several bones ; but as we advance in life, it consists of three, and sometimes only of two pieces ; and, very often, in old persons, the whole is formed into one bone. The uses of this bone, are for the articulation of seven true ribs on each side ; it is also articulated with each of the clavicles : it serves for the origin and insertion of several muscles ; it supports the mediastinum, and lastly defends the heart and lungs. It is observable that a similar bone is found in almost all animals which have lungs, and even in such as have no ribs : the frog for instance. See **THORAX**.

BREASTS, or *mammæ* in females, consist of two globular projections, arising on each side of the breast-bone, and secreting that nourishing fluid for infants, known by the name of *milk*. On the middle of each breast, is a projecting portion, termed *papilla*, or *nipple*, around which is a reddish brown-coloured circle, called the *areola*. The form and situation of the breasts are ornamental. They are, however, very sen-

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sible to the touch, and ought, therefore, most carefully to be guarded against external injuries ; as a very slight bruise or blow may be attended with serious consequences. No part of the human body is so easily affected by cold, or so liable to cancerous complaints, as that of the female breast. See the next article, and also **CANCER**, **MILK**, and **NIPPLES**.

BREASTS, INFLAMMATION OF.

When the breasts begin to be uneasy, and swell a few days after delivery, from the milk stagnating, a shivering is generally a preceding symptom ; to this succeeds heat, a quick pulse, thirst, headache, and difficulty of breathing.

If the pulse be hard and full, and the other symptoms violent, recourse must be had to bleeding and mild purgatives. At all events, in this disease the bowels must be kept somewhat open. Gentle sudorifics may be also prescribed : the following fomentation, if applied in time, will be generally effectual in removing the swelling of the breast : take four white poppy heads broken in pieces ; let them be boiled in a quart of water to a pint ; then strain, and add to the liquor six drachms of muriate of ammonia. A poultice made with bread, milk, and oil, may be also applied.

If, however, the swelling does not yield to this method, and suppuration cannot be prevented, it must be treated accordingly. But, in general, it is best to let the tumour break of itself than to open it, either with the lancet or caustics. The ulcer is afterwards to be treated according to the common rules enjoined in disorders of this kind. See **ABSCESS**.

If the patient appears to be sinking under the discharge, it will be necessary to support her both by food and medicine, till a favourable result is obtained.

If there be only a hardness of the breast from coagulated milk, emollient cataplasms and fomentations may be used, as likewise the following liniment : take of olive oil two fluidounces ; of solution of subcarbonate of ammonia half a fluidounce : mix them.

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In order to prevent this disease, females ought, above all things, to remember that, *immediately* after they have recovered from the fatigue and exhaustion attendant upon their labour, the child should be put to the breast; nor should they, except under very peculiar circumstances indeed, suffer the milk to be abstracted from it by any agent except the child, notwithstanding officious nurses, and ignorant persons should advise to the contrary.

BREATH, *fetid*, a misfortune to which many persons are liable; and although they may sometimes be in health, yet, where the breath has a disagreeable smell, disease of some kind or another may be strongly suspected.

A diseased stomach is often the cause of this complaint; so are carious teeth, putrid gums, ulcerations of the lungs, or some peculiarity not evident in the constitution of the individual.

If it originate from the stomach it will most probably be alleviated, or removed, by gentle laxatives; in general, persons who are so unfortunate as to labour under this affliction should never permit themselves to continue costive. If it originate from the teeth or gums, tooth-powder, and frequently washing of the mouth, are the obvious remedies: carious teeth should be, of course, removed. If it arise from any disease of the lungs, or other organs of respiration, regard must be had to the primary affection. See CONSUMPTION.

As palliatives for this unpleasant symptom of disease, gargles, consisting of lime water, or a decoction of Peruvian bark, or a liquor made by mixing two ounces of compound alum water, and half an ounce of essence of lemons, with three ounces and a half of fennel-water, should be used frequently before going into company. The root of Florentine orrice, if chewed, or kept in the mouth, is also of service.

BREATHING is that alternate contraction and expansion of the lungs and breast, by which animals inspire and expire the surrounding atmosphere: a process necessary to the support of life.

From the moment a child enters the

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world the air penetrates into its lungs, which were previously filled with a watery mucus, but are then opened for the circulation of the blood. Thus breathing or respiration, one of the primary and most important of the vital functions, commences with birth, and is incessantly active during the whole life of the individual; nor can it be interrupted for many minutes without a total stop being put to the animal machine by death.

From what has been said under the article air its use in respiration may be known: indeed, our own sensations sufficiently convince us that without air of a certain degree of purity we cannot breathe freely, and in some air not at all. Hence the cough, and other oppressive sensations experienced in a smoky room, a crowded assembly, as well as by many persons in the dense smoke of a populous city.

Air being then essential to life, the impropriety of breathing in crowded assemblies, close rooms, bed-chambers without fire-places, and other confined situations is evident. It is true that some persons escape immediate injury from breathing air in such places, but are they sure that some insidious malady does not take its rise from these impure inhalations? We suspect, indeed, that some of the sudden deaths of our citizens arise from this cause alone: principally by inducing the disease termed obesity. We do not wish to alarm our readers, but we only desire in this article, as in every other in our work, to impress them with the best means of preserving or restoring health; and, therefore it is that we now insist upon the necessity and importance of fresh and pure atmospheric air to the support and well being of animal life. See LUNGS and RESPIRATION.

BREECHES, or **SMALL-CLOTHES**, a part of the dress of most Europeans, worn by males, and reaching from the waist to the knees.

Breeches should not be made too tight in the waistband: for pressure upon the bowels must necessarily occasion uneasiness, and prove very injuri-

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ous. The form of these articles most to be preferred, and now very generally adopted, is that of pantaloons: these ought to be of a sufficient width, of a thin substance in summer, and of woolen, or other warm cloth, in winter.

Small-clothes made of leather, and so tight as to fit exactly the shape of the limbs, are liable to many inconveniences; they benumb the hips and thighs by impeding the circulation, occasion a painful pressure upon the parts, especially the abdomen; and by the close texture of the leather, in a great measure impede perspiration.

BREEDING of Cattle is the method of improving the different races of various useful animals, by crossing or intermixing one species or variety with another.

Before the improvements introduced by BAKEWELL, the value of an animal was entirely judged of by its bulk; and if a great size could be obtained, more regard was paid to the price which the animal ultimately fetched, than to the cost of its food. Of late, since breeders began to calculate with more precision, small, or moderate-sized animals, have been generally preferred. But animals of a large size are still preferred by some breeders. Much depends upon the pasture, taste, mode of consumption, markets, &c.; so that in different instances both sizes have their advantages. The intelligent, however, unless his pastures be of a nature peculiarly forcing, will naturally prefer the moderate-sized in the stock he rears.

Though it is desirable to bring the shape of cattle to as much perfection as possible, yet profit and utility ought not to be sacrificed to mere beauty, which may please the eye but will not fill the pocket. The form, or shape, should be compact, so that no parts of the animal should be disproportioned to the other parts; and the whole should be distinguished by a general fulness and roundity of shape. The chest should be broad; the carcass should be deep and straight; and the belly of a moderate size. The head, the bones, and other parts of inferior value, should

be as small as is consistent with strength, and with the other properties which the animal ought to possess.

Mr. CLINE, the eminent surgeon, in a communication to the Board of Agriculture on the form of Animals, states that the external form is only an indication of the internal structure; that the lungs of an animal are the first objects to be attended to, for on their size and soundness the health and strength of an animal principally depend; the external indications of the size of which are the form, size, and breadth, in particular, of the chest; that the head should be small, by which the birth is facilitated, and as it generally indicates that the animal is of a good breed; that the length of the neck should be in proportion to the size of the animal, that it may collect its food with ease; and that the muscles and tendons should be large, by which an animal is enabled to travel with great facility.

It was formerly the practice to estimate animals by the size of their bones, a large bone being considered a great merit. But it is now known that this opinion was carried too far; that the strength of an animal does not depend upon its bones, but its muscles.

An animal's arriving soon at perfection is a material object for the breeder, his profit principally depending upon it. This desirable property greatly depends on a mild and docile disposition; and as this docility of temper is much owing to the manner in which animals are brought up; attention to inure them early to be familiar cannot be too much recommended. A tame breed has also other advantages; it is less apt to injure fences, or to break into adjoining fields, consequently it is less liable to accidents, and can be reared and supported at less expense.

In the wilder and bleaker parts of a country a hardy and healthy constitution is a most valuable property in stock. In this respect different kinds greatly vary; and it is of consequence to select from different situations cattle with constitutions suitable to the place in

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which they are to be kept. It is a popular belief that dark colours are indications of hardiness. In mountain breeds of cattle a rough pile is reckoned a desirable property. It enables them to face the storm. Hardy breeds are also exempt from various diseases.

The prolific quality of cattle runs more strikingly in sub-varieties, or individual; but by selection it might probably be extended to the whole breed. This quality is partly owing to something in the habits of animals, and partly to their previous good or bad treatment.

A tendency to grow is among the qualities for which thorough-bred cattle and sheep are distinguished. Animals which have the property of *growing* are usually straight in the back and belly; their shoulders well thrown back, and their belly rather light than otherwise; but a gauntness and paucity of intestines should be guarded against; both indicating an unthrifty animal. Being too light of bone is also a great fault. A good grower has always a middling-sized bone. A bull distinguished for getting good growers is inestimable; but one whose progeny takes an unnatural size ought to be avoided.

A disposition to fatten is a great object in animals designed for the shambles. Most sorts of cattle and sheep bred in hilly countries become fat when transferred to low-land pastures, on which the more refined breeds would barely live. The skin and flesh of cattle, when handled, should feel soft to the touch: in a good sheep the skin is not only soft and mellow, but in some degree elastic. The rigid-skinned animal is always the most difficult to fatten.

The art of *improved breeding* consists in making a careful selection of males and females for the purpose of producing a stock of the greatest perfection. Breeding from the *same* family, it is now proved, cannot be successfully persevered in; and as a change of seed is found in general advantageous in the vegetable, so in the animal kingdom, an intermixture of *different* families of the same race is

therefore a preferable system. When these have been for some time established in different situations, and have had some slight shades of difference impressed upon them by the influence of climate, soil, and treatment, it is found advantageous to interchange the males, in order to improve the excellencies, and remedy the defect of each family.

Crossing two distinct breeds or races, in order to improve either of them, requires a degree of judgment and perseverance which is rarely to be met with. Crossing with larger males from another country is sometimes attempted with a view to enlarging the size; but such attempts should be made with great caution: for irreparable mischief may be effected. Mr. CLINE thinks that any improvement of form by crossing must entirely depend on selecting a well-formed female, larger in size than the usual proportion between male and female. Where the female is too small, or the male too large, the offspring is generally ill-shaped. Upon such choice of the female the breed of English horses was improved, by crossing them with diminutive stallions, Barbs and Arabians. The Clydesdale horses originated from a cross with Flanders mares; and our hogs have been improved by crossing with small Chinese boars. Other experiments on the same principle have also succeeded. The plan recommended by Mr. CLINE has been successfully practised in Holland by M. Vandergoes; the excellence of whose breed is attributed to his using none but young bulls, which have not attained the full growth or size, and which he always parts with at three years of age.

The improvement of the *fleece* depends, however, upon the male; it being proved that, in the course of four or five generations, using always the Merino ram, fleeces rivalling the Spanish may be obtained from ewes of the British stock.

In regard to the time of commencing breeding a cow in general should not produce a calf at an earlier period than three years old. A bull may be first

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used at fourteen or eighteen months. He then shews most vigour, and more energy may be expected in his produce. At two or three years old he frequently becomes ungovernable, and is killed. Many persons, however, contend that a bull, if well bred, becomes generally better till he reaches seven or eight years; and indeed till his constitution is impaired by age: this is, however, exceedingly questionable.

In breeding care should be taken that the young may be brought forth at the season of the year when there is usually a full supply of suitable food. In high and exposed situations this is particularly necessary to be attended to. Where such precaution has been neglected, great losses have been sustained.

Another rule in breeding is never to fix on the ewes to be put to a favourite ram, until the lambs got by him the preceding year have been examined. The perfections and defects of his progeny are thus ascertained, and ewes may be given him accordingly.

A third rule is, in selecting a male, not to choose the weakest, though he may possess the most delicate form, and approach the nearest to symmetry: for in this the process of nature may be followed, where the strongest males, driving off the weakest, are invariably employed in the propagation of the kind.

We may add that Bakewell was the father of this improved system of breeding; and experience has since made the art more perfect, although it is of all others the one in which blunders may be most easily committed. It is eminently useful, but requires much attention and expense, and can never be kept up with spirit without liberal encouragement and good prices. See **BULL, Cow, Ox.**

For the *breeding of Horses* see **HORSE**. For the time of going with young of different animals, see **GESTATION**.

BREEDING of FISH. The necessary qualities of a pond for breeding fish are very different from those which are requisite to make it serve for their nourishment. A good breeding pond

should have plenty of rushes and grass about its sides, with gravelly shoals, like those of horse-ponds. The quantity of the spawn of fish being great, two or three melters, and as many spawners placed in such a pond will, in a short time, stock a whole country. If such ponds be not kept entirely for breeding, but to let the fish grow to a considerable size, their numbers should be lessened, or they will otherwise starve one another. Different kinds of fish may also be added which will prey upon the young. For this purpose eels and perch are most useful. Some fish will breed abundantly in all kinds of water; of this nature are roach, pike, perch, &c.

BREEDING, GOOD, an expression used to denote the proper deportment of persons in the external offices, and decorum of social life.

Good breeding necessarily implies civility: although a person without being well-bred may be civil: the one is the result of a good natural disposition, the other of good sense joined to a suitable education.

The most perfect good breeding is, perhaps, only to be acquired by much admixture with, and a great knowledge of the world, and by keeping the best company. By best company is not to be understood, always, persons in the most elevated situations in life: for were this the case, the difficulty of obtaining a knowledge of good breeding must be comparatively rare. The best company certainly must be refined: and that company is the best which inculcates the most delicate sentiments, the nicest regard to the feelings and rights of others, and in which no mean, mercenary, or low and disgusting ideas or conduct have place.

Good manners and true politeness ought to be the same; but it too often happens that good manners are outraged when the *forms* of politeness are still, with the greatest exactness, complied with; and hence it is not at all uncommon to find, when the external veil of good breeding is seen through, or occasionally lifted off, that shapes of no or-

dinary disgust are presented to our view. That good breeding, however, which only covers the mind and behaviour as a crust, a mask to be put off at pleasure, is not the good breeding which, in this article, we are desirous of presenting to the attention of our readers. As far as such good breeding goes it is well; but good breeding ought to effect a change in the habits and thoughts of the mind, as well as in the outward conduct and appearance of the body.

Tell me with whom you associate, and I will tell you what you are, has been often said, and its general truth does not, we think, admit of question: hence the importance of association, in forming the manners, particularly in early life. From the peculiar situation of menials and dependants, and the cunning, craft, and low and vulgar artifices, which such situations necessarily engender, children should, as much as possible, be prevented from being, or continuing long, in their company.

Good breeding adorns and enforces virtue and truth: indeed, it constitutes a part of both. It connects and endears; and while it indulges a proper freedom, restrains all licentiousness of conversation which alienates and provokes. Good breeding necessarily implies an attention to the opinions, the wishes, and the wants of others, and excludes all supercilious and imperative demands of attention to our own. Great talents may render a person famous; great merit procures respect; great learning esteem: but good breeding commands and ensures our love and our affection. One of the greatest enemies to good breeding is that satirical turn for wit, punning, and the desire of saying smart things, which is too often indulged in by the young, and those who set less value upon the opinions and feelings of others, than upon the too high one which they possess of their own. Than this, nothing can be a greater offence. If, therefore, a person determine to say whatever he thinks, right or wrong, no wonder if, now and then, he should blunder upon wit, which may cut so keen as to produce a wound

which is long in healing, and which is, perhaps, never forgotten.

Good breeding is peculiarly deserving the attention of the female sex, as the greatest ornament to those who possess beauty, and the surest attraction for those to whom nature has been more sparing of her external gifts: even the beautiful cease to attract long if the graces of the mind be wanting; and how often do we see the accomplished female, without personal attraction, obtain that attention and respect which the mere beautiful in form, if they obtain, cannot, without good breeding, continually insure.

On the whole, good breeding is attended with so much advantage that the study of it ought to be universal: it soothes the boisterous, and calms the agitated; it more closely attaches man to man; it pours a balm into many an aching void in society, and directly tends to check the violence of all the turbulent passions, and to render the path through life more easy and agreeable to all.

BREWING is the art of extracting the saccharine matter from malt, prepared from barley and other grains, and, after a suitable addition of hops, or other bitters, of fermenting the liquor, so as to produce, according as is desired, either strong beer, ale, porter, or small beer, &c.

This art is undoubtedly a branch of chemistry, and depends on fixed and invariable principles. Those principles are now beginning to be better understood than they formerly were: and although no complete and unerring theory has yet been obtained, sufficient is now known to enable us to give directions for brewing, with certainty and promptitude.

Barley is the principal grain used for brewing; but almost every grain, with, perhaps, hardly any exception, may be employed for the purpose. In America it is not uncommon to make beer with the seeds of Indian corn. In Africa the negroes make beer from the seeds of the *Holcus spicatus*. Dioscorides assures us, that in Spain and Britain wheat was

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employed; and beer has been made from wheat at Madras. Oats have also been employed for this purpose in Great Britain; and in Germany, and the north of Europe, we are informed, it is not uncommon to employ rye. But, notwithstanding these have all been, and may be occasionally used, yet from the great quantity of saccharine matter which abounds in barley, being, according to Sir HUMPHRY DAVY, 70 parts in one thousand, or about one-thirteenth of its bulk, before it is converted into malt, barley is almost solely used for this purpose in Great Britain, and, indeed, in every part of Europe where beer is made; the big, so much used in Scotland, we consider, of course, a species of barley.

It has been for a long time customary to convert barley into malt before it is employed in the brewing of beer. But this conversion is not absolutely necessary; it adds, however, considerable facility to the different processes of the brewer. Experiments of making beer from unmalted barley have been frequently made, and the process is found perfectly successful; but several precautions are necessary, in order to succeed. The water poured upon the ground barley in the mash tun, must be considerably below the boiling temperature: for barley meal is more apt to set than malt; that is, to form a stiff paste, from which no wort will separate. The addition of a portion of the chaff of oats, serves very much to prevent this inconvenience, and facilitates considerably the separation of the wort. Care must likewise be taken to prevent the heat from escaping during the mashing; and the mashing itself must be continued longer than usual: for it is during the mashing that a portion of the starch of the barley is converted into saccharine matter. This change seems to be owing merely to the chemical combination of a portion of the water with the starch of the barley; just as happens when common starch is converted into sugar, by boiling it with very diluted sulphuric, or any other acid.

This method of brewing from raw grain

answers admirably for small beer; and some years ago it was practised by several brewers of small beer in Edinburgh to a considerable extent, and their beer was considered as greatly preferable to small beer brewed in the usual manner. But unfortunately the practice was stopped by a decision of the Court of Exchequer: a decision detrimental to the public, in consequence of checking those experiments in the improvement of making beer, which it is at all times desirable to promote. Although, therefore, the practice of brewing from unmalted grain is not permitted in Great Britain, we have been induced to make these preliminary observations, that our readers may be aware of the utility of unmalted grain, and also because we suppose that our work will be read by many persons out of England, who may be disposed to adopt the practice. Upon this part of our subject, we would add that raw barley has not been found to answer so well for strong beer, as for small beer. The strong beer is perfectly transparent, and will keep for several years without turning sour, but it has a peculiar flavour, which a little practice in this novel method of brewing might most probably get rid of; in which case, raw grain would, we apprehend, answer in every respect as well for brewing as malt does.

It is not our intention here to describe the process of malting; that will be more appropriate under the article MALT, to which we therefore refer. Nor, as this is a domestic Encyclopædia, shall we describe the various apparatus used for brewing in the large way, which vary in proportion to the size and nature of the brewery: our sole object is domestic brewing.

Beer, the generic term for all malt liquors, it is now well known, is a vinous, or spirituous preparation, made principally from the sugar obtained by infusion, from most kinds of farinaceous grain; but it is evident, that any vegetable which contains sugar, and which is not in other respects injurious, or from which sugar can by any process be developed, can be used for the produc-

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tion of such liquor. The *flavour* depending in every instance upon the aroma, the extractive matter of the vegetable, and a portion of essential oil, either of the vegetable itself, or in the matters added to the liquor during the process of making it, or afterwards; or, if malt be used, on the method too in which it is dried. The hop is one of those additions to which we have alluded; and it is said that the addition of hops to malt liquor keeps it good much longer, than liquor of the same strength can be kept under the same circumstances without it. The power of preserving malt liquor, attributed to hops, is so common a truism, that it is almost heretical to doubt it: but we suspect, notwithstanding, that this truism, like many others, floating about in society, admits of very great question. However, as we have not either leisure or inclination to make experiments for determining it, we shall take it for granted, that hops, or other bitters, are essential ingredients in malt liquors, and describe them accordingly.

In brewing, the first thing necessary is to take care that the copper for boiling the water, &c., the mash-tun, or vat, all the tubs and coolers, and the cask into which the liquor is to be put, are clean, sweet, and wholesome; and that the cask in particular be perfectly tight.

Nor is the water for brewing of trifling consideration. Rain water, if to be obtained clean and sweet, is beyond question the best; next to that, river water, if soft, is to be preferred; but spring, or hard water, should by all means, if possible, be avoided.

The casks in most common use in London, are barrels containing 36 gallons. To make such a cask of good malt liquor, the following proportions may be taken: malt three bushels, hops two pounds. Having measured the quantity of water which the cask will hold, by a pail, or bucket, put that quantity into the copper, and make it boil; as soon as it boils, dip off half of it into a tub, or vat, raised upon a bench about a foot and a half from the ground, and which has a hole in its

side near the bottom, into which is introduced a spigot and fauset sufficiently large, over the end of which, in the vat, is fixed a bundle of small clean sticks, or other convenient apparatus, to prevent the malt from running out. Let the water remain quiet in the vat till it has cooled to about the temperature of 175, or 180° of Fahrenheit's thermometer; or, in the absence of this instrument, till the face can be seen pretty distinctly in the water;—then mix the malt with the water, gradually stirring it with a mashing stick, which is usually made for the purpose, and too well known to need being described. Reserve a few handfuls of the dry malt to strew over the surface after it is mixed, in order to prevent as much as possible the escape of the heat; and cover the vat besides with cloths, more effectually to keep the mixture hot. This is to remain undisturbed for three hours; the wort is then to be run out by the spigot and fauset. As soon as it has done so, pour on the same quantity of water, cooled in a tub to the same degree of heat as before, and let it remain on the malt half an hour, or somewhat longer; it will not be advisable now to agitate the water with the malt, as doing so will most probably wash out the starch, which you do not want. Let the wort run off a second time; and as you will now be enabled to judge how much more fluid will be necessary to fill your cask, add as much more water to the malt, cooled as before, as will be sufficient for your purpose, letting the last portion stand a short time in the vat; always remembering that it is advisable to have for a cask of 36 gallons, at least ten, or fifteen gallons of wort more than sufficient to fill your cask, to allow for waste and evaporation; and keeping in mind, also, that the *more water* is used, the more effectually will the sugar be washed out of the malt, and the stronger will the liquor become. When the liquors, or worts are all run off, mix them together, and put them into the copper, making it boil as soon as possible. It will be necessary to know how many

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gallons the copper holds, in order to judge of the evaporation : for the overplus of quantity must be reduced, by boiling to the quantity of gallons which are wanted. When the wort is reduced by boiling, to nearly the measure which it is intended to be, and not before, put in the two pounds of hops, and let them boil in the wort a quarter of an hour, or twenty minutes ; and it is most advisable during the time of their boiling that the coppers should be covered down. Remove the fire from beneath the copper, and strain off the wort into proper coolers. When it is cooled down to 65, or 70°, mix one quart of good yeast with a few gallons of the wort first, and afterwards put the whole together into a vat to ferment, for two or three days, or more ; or put it at once into the cask in which it is designed to be kept, and let it ferment there : which last method is the most effectual to preserve all the strength of the liquor. The necessary care must of course be taken to watch the fermentation in the cask, and fill it up occasionally with the superfluous liquor : as soon as it will bear a bung in it, the cask ought to be stopped down slightly at first, till the powers of the disengaged gas be ascertained ; or the cask may burst.

This ale will be fit for drinking in about two, or at most three months, depending of course upon the season of the year in which it is made : October is a proverbial month for brewing, and from the equability of its temperature, is undoubtedly the best ;—the months of March and April are the next best. But all hot, and all very cold weather are both very bad for the process of good brewing.

If instead of three bushels of malt, six be added to the same quantity of water, with four pounds of hops, and the same processes of mashing, boiling, and fermenting gone through, a strong beer will be the result.

Ten gallons of good *small beer* might be afterwards made from the not wholly exhausted malt of this last brewing. Or small beer may be made at once, by using a much less proportion of

malt and hops, than in the making of ale : it is, however, the practice of many persons to use more hops in proportion as the malt is diminished in quantity, under the impression, that hops contribute to the keeping of liquor, particularly small beer, and other weak malt liquors.

These are the processes of domestic brewing in its simplest form, from malt and hops only ; but the varieties of taste and fancy have from time to time introduced some others, which it may be necessary briefly to mention.

Porter, so well known, and so much drunk in London, is said to derive its deep brown colour, and peculiar flavour, from the malt being highly dried upon the malt kilns : but although there is no doubt that a peculiar flavour and colour may be obtained from malt which is highly dried, yet that porter is not in general made from malt and hops alone, we have indubitable reasons for knowing. And, therefore, we believe that whoever attempts so to make it, will not succeed in giving it the same flavour which London porter at this time has.

A small tract has been put into our hands, in which the mysteries of brewing porter are developed, and as we have good reason to rely upon the facts which are there stated, we shall lay the method at once before our readers, premising that the porter brewers of London professedly use three kinds of malt : namely, pale malt, amber malt, and brown malt. These three are mashed separately, and the worts from each, are afterwards mixed together in the same fermenting vessel. In some breweries there are three separate mash tuns ; in others, the custom is to mash one kind of malt the first day, another kind the second day, and a third kind the third day. The first day's wort is put into the fermenting vessel, and mixed with yeast ; and the other two worts are added to it successively, as they are formed. The fermentation of porter in these breweries is carried on with considerable rapidity, so that it is over in two or three days. Judging from the taste of some

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of the worts, *quassia* seems to be employed in considerable quantity by some brewers, much more sparingly, if at all, by others. The proportion of the different malts in the different breweries varies. One of the best brewers in London, uses nearly two parts of pale malt, to one part of brown.

The following form of ingredients for porter, will be found sufficient for five barrels; but it may be reduced in its proportions to one fifth, or to any other measure, which the brewer of porter may desire.

Take of malt one quarter; hops eight pounds; treacle, nine pounds; liquorice-root bruised, eight pounds; *essentia bina*, (made by boiling eight pounds of moist sugar in an iron vessel, till it come to a thick syrupy consistence, perfectly black, and extremely bitter, adding at the end of the operation, and whilst it is hot, sufficient hot water to make it of the consistence of a thick syrup when cold,) eight pounds; colour, (composed of eight pounds of moist sugar, boiled till it obtains a middle state, between bitter and sweet, and which gives to porter that fine mellow colour so much admired,) eight pounds; capsicum, bruised, half an ounce; some use grains of paradise; Spanish liquorice, two ounces; *coccus indicus*, bruised, a quarter of an ounce; carbonate of potash, two drachms; heading, (composed of equal parts of powdered alum and dried sulphate of iron, in powder: designed to make the porter froth well,) a quarter of an ounce; ginger root bruised, three ounces; slacked lime, four ounces; linseed, one ounce, cinnamon bruised, two drachms.

These ingredients, thus prepared, are to be added to the first wort, and boiled together with it.

Let your wort stand after mashing, as mentioned above, for brewing ale, an hour and a half or two hours; then let the liquor run off; if it at first run thick and discoloured, draw off one or two pails full, and pour it back again into the mash-tub to refine again, till it runs clear. Pour on the water for the second mash as before, and let the li-

quor stand an hour and a half, then run it off; but never let your malt stand dry; keep lading fresh water over it till the quantity of wort which you wish to have is extracted, always allowing for waste in boiling, as well as otherwise.

The copper full of the first wort must be boiled an hour, and while boiling add the ingredients, except the ginger and the *coccus indicus* berries, mentioned in the receipt. The hops are now to be boiled in the wort, and carefully strained from it, in order to be boiled again with the second wort. Eight pounds is the common proportion, but the quantity is varied in summer from 8 to 12 pounds: after mixing the worts, set it to cool; when sufficiently so, add from one to two gallons of yeast to it, in order that it may work quickly: for porter should be brought forward quicker than any other liquor, except twopenny. Let it work till it comes to a good deep head, then cleanse it by adding the ginger. The liquor is now fit for barreling; let the barrels be full, and let the yeast work out, adding fresh liquor to fill them till they are quite full, and have done working. Bung up the barrels, but keep an eye upon them, to see that the fermentation is not likely to do mischief by bursting the casks, which, without care, is no uncommon accident; a peg will, generally, be a good regulator.

The linseed, ginger, lime-water, cinnamon, and several other small articles, may be added or withheld, according to the taste, custom or practice, of the brewer, being merely optional, and used solely to communicate flavour; hence it is that so many different flavours are distinguishable in porter, and that so few brewers are found to resemble each other in their produce.

Of the other articles it may be necessary to observe, that, however disagreeable, or even pernicious, they may be supposed to be, the author of the tract above alluded to, informs us, that he has always found them requisite in brewing porter, and he thinks that they must be invariably used by those who wish to continue

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the taste, flavour, and appearance of the porter to which they have been accustomed.

For the benefit of those persons who wish to brew porter on a very small scale, we add the following form, for six gallons only :

Take one peck of malt ; four ounces of liquorice root ; four ounces of Spanish juice ; four ounces of *essentia bina* : four ounces of colour ; four ounces of hops ; half a pound of treacle, and a very small quantity of capsicum and ginger.

A common boiler which will contain three gallons, a pail through which a hole may be bored near the bottom for a vat : a common washing-tub, well cleaned for a cooler, and a cask to contain six gallons, are all the apparatus necessary for this brewing. The liquor will be fit for drinking in a week.

The only part which now remains to be treated of relative to the process of brewing is, the fining of the liquor. Generally speaking, when liquor is brewed from malt and hops, the process being properly conducted, and at a suitable season of the year, no means whatever are necessary for this purpose, the liquor becoming fine of itself. However, it sometimes happens, from some untoward circumstances, that malt-liquor is muddy, and as porter, and such other compound liquors, very often require some addition to make them fine, the ingredient used for this purpose is isinglass, dissolved in stale beer, till the whole comes to a thick glucy consistence, like size, and which must be used discretionally : one pint is the usual proportion to a barrel of porter, but sometimes, two, and even three, are found necessary. Particular care must be taken that the beer in which the isinglass is dissolved, be perfectly clear, and also stale. If, however, amber malt be used, which is we believe the most wholesome, and the *essentia bina* be omitted in the brewing of porter, it will generally become fine of itself very soon, without any addition.

Many different plans have been recommended for brewing with a less

quantity of malt, and adding other ingredients in its stead, particularly when malt is dear. The following forms for brewing ale, two-penny, and small beer, are perhaps as economical as any which can be adopted.

For brewing one barrel of *ale*, take two bushels and a half of malt ; hops two pounds and a half ; sugar just boiled up three pounds : of capsicum a quarter of an ounce ; coriander seeds an ounce ; *coculus indicus* half a drachm ; of common salt four ounces. The capsicum and coriander seeds are to be boiled in the wort : boil and mash as in porter.

For a barrel of *two-penny* : take one bushel and a half of malt ; one pound of hops ; one pound and a half of liquorice roots ; a quarter of an ounce of capsicum ; two ounces of Spanish juice ; and five pounds of treacle.

Two-penny not being an article suited for keeping, must not be brewed except for immediate drinking.

For a barrel of *table beer* : take one bushel of malt : one pound of hops ; one pound of the colour mentioned in preparing porter ; one ounce of Spanish liquorice ; and one pound of treacle.

We give these forms as well as those for brewing porter, rather from an impression that such would be expected to be found in a work of this sort, than from a conviction that they are such as we ought cordially to recommend. Some of the ingredients are, to say the least of them, useless, if not mischievous ; and although we do not desire to give them the harsh name of poisons, we think that it would be much better for the health of the community, and particularly for the inhabitants of the metropolis, if they would, with one consent, give up the drinking of that now very indifferent liquor, generally sold under the denomination of porter, and return to that more simple liquor which is to be obtained from malt and hops alone ; and to this end it is expedient that the malt-liquor should be of a *pale* colour : for, as certainly as it is high-coloured, will the public as certainly, very often, be the victims of fraud : a colour

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cannot be added to malt-liquor without altering its taste; and there can be no doubt, that even high-dried malt is less productive of alcohol, and nutritive matter, than that which is dried slightly.

In this paper it cannot be necessary to go at large into the theory of FERMENTATION, (see that article) but we may state that the theory of brewing from malt, is simply this. The water is poured upon it to a certain degree of heat only, in order that it might not dissolve the starch in it: for it is not the starch, but the *sugar* and a portion of *nutritive, extractive matter*, which we want; the heat of about 180 degrees is sufficient to dissolve and wash out both these ingredients, together with some others upon which the taste depends. Sugar is the basis of alcohol, or spirit of wine; and upon mixing a portion of yeast with the wort, the sugar by the act of fermentation is decomposed, and alcohol is formed in exact proportion to the quantity of sugar in the wort; or in other words, according to the strength of it, and a prodigious quantity of fixed air, or carbonic acid gas, is disengaged, producing with the yeast a large quantity of froth. When the *active* fermentation is over, the beer is usually put into casks; but there is a slow fermentation in all strong liquors still going on; and therefore the liquor has not arrived at its ultimate strength, till all the sugar contained in it is decomposed, which, in ale, is usually in about two or three months; but a hogshead of strong beer will take twelve or more months to complete its fermentation.

The gas to which we have alluded, is one in which no animal can breathe for a single moment, nor will a candle burn in it. It is therefore very necessary to take care in cleansing casks or vats, which have had malt liquor in them, that they are freely ventilated with common air; and even close cellars ought to be guarded against, where any malt-liquor is in a state of fermentation; a free circulation of air, ought by all means, at such a time in particular, to be obtained. This gas is considerably heavier than common air, and it will be

found during the fermentation of malt-liquors, to be constantly flowing over the sides of the vat, or down the sides of the cask to the ground. If the vat should not be full of the liquid, and a candle be put into it, the smoke of the candle, which the gas will extinguish, will at once demonstrate the fact.

We cannot close this important subject, without saying a word or two on the nutritive qualities of malt-liquors. It will be found that these liquors are stimulant or nutritive in proportion to the quantity of alcohol and extractive matter which they contain: small beer, as is well known, possesses few stimulant or nutritive properties; the principal thing which makes it even pleasant as a beverage, is the carbonic acid which it contains; when that has escaped from it, it becomes vapid and dead. But the case is not the same with strong beer: a portion of extractive matter, and the alcohol, form together the value and nutrition of that liquor. This being the case, it may be easily seen by the following list from the experiments of Mr. BRANDE, which are the best. One hundred parts of

Burton ale contains of alcohol per cent. by measure	8,98
Edinburgh ale	6,20
Dorchester ale	5,56
Brown stout	6,80
London porter (average)	4,20
—Small beer	1,28

So that it appears London porter, on the average, contains less than one-twentieth of spirits of wine, or alcohol. The extractive matter in these liquors has not been so nicely examined.

We know that there are different opinions respecting the use of malt-liquor as a beverage; indeed, some persons have gone so far as to assert that a labourer will do as much work by drinking of water, as by drinking of malt-liquor; but we think that the assertion is erroneous, and that an exception is taken for the rule: that malt-liquor, cider, and other fermented liquors of this kind, are the best li-

quors which the labourer, and indeed any other person, who takes much muscular exercise and exertion in the open air particularly, can possibly drink, we have no doubt; and have, in numerous instances, witnessed its stimulating effects.

But, although we think such liquors are good for the active, the healthy, and the robust, we think in numerous instances, nay almost generally, that malt liquors are bad for the studious, the sedentary, the valetudinarian, and those who are confined within doors for days or weeks together: we even think plain water for them a far preferable diluent: nor can we approve of large potations, or indeed any potation of malt liquor, during dinner by those who take wine or diluted spirits afterwards.

The *sprightliness* of malt liquors, as well as cider, wines, &c., depends upon the quantity of carbonic acid gas which they contain; but it is no criterion whatever of their strength, or of the proportion of alcohol which is in them. See CARBONIC ACID, and SODA-WATER.

Various patents have been from time to time obtained for improvements in brewing, but we do not think any of them of much importance to the private brewer.

BRIAR, the *Sweet*, *Eglantine*, or *Rosa rubiginosa*, is a well known indigenous plant, of which there are many varieties: the principal are, the common single-flowered, semi-double flowered, blush double-flowered, and yellow flowered. This shrub deserves to be cultivated in every garden on account of the odiferous property of the leaves. The best places for planting it are the borders contiguous to walks. The young branches of the sweet-briar are a rich addition to the odour of nosegays and bough-pots. The blossoms of this shrub are constantly visited by bees; and the leaves are used on the Continent for tanning soft leather.

It may be propagated by suckers: some of the sorts by seeds.

Briar, wild, See DOG-ROSE.

BRICK, a kind of factitious stone of

a reddish or yellow colour, made of soft clay, or of a mixture of clay and coal-ashes or sand, moulded, dried in the air, and then baked or burnt in a kiln or otherwise, to serve the purposes of building.

The common width of bricks for building, is four inches and a quarter, or four inches and a half, thickness two and a half, and length nine inches. There is, however, a great variety of bricks of different forms and dimensions, and for different uses.

The making of bricks is regulated by various Acts of Parliament. They are also subject to different duties, as they vary in size and shape.

The most beautiful white bricks in this country are made at Wool-pit, in Suffolk. Stourbridge clay and Windsor loam are esteemed the best for making bricks which are required to bear an intense heat. These are used for coating furnaces, and lining the ovens of glass-houses, where they commonly withstand the utmost fury of the fire.

The most lasting bricks for building are those which have lost their reddish hue, and incline to that of yellow or blue: both proofs that the process of melting the clay was about to commence. Bricks burnt to this state of hardness, if kept dry, are generally indestructible by any process of the weather in this country. But even hard-burnt bricks, if not absolutely vitrified, will, when saturated with water, crumble to pieces after being frozen. The necessity, therefore, of guarding the tops of garden and other walls made of bricks from the immediate access of water is apparent.

There is an article to be obtained in London and elsewhere in Great Britain, called *scowering bricks*, composed of a mixture of clay and sea-sand, and slightly baked, so as to be very useful for the purpose which their name designates. It is made, as far as we know, only at or near the town of Bridgewater in Somersetshire. This peculiar mixture of clay and sea-sand is occasioned by the velocity with which the tide flows at that port.

Clay for making bricks should be

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dig between the beginning of July and October, and be turned once or oftener during the winter.

BRICK-water, or water impregnated with the contents of bricks, is said to be possessed of very peculiar and striking properties, and at the same time very pernicious in its effects; we are indebted to Dr. Percival for this information. It is concluded, therefore, that the lining of wells with bricks is extremely improper, and should be always avoided.

BRICKS, *Oil of*, a preparation formerly in some esteem, but now rarely used for any purposes except those of the farriers, and as an ingredient in British oil.

It is obtained by soaking fragments of bricks in olive-oil, and afterwards distilling them in the usual manner.

Notwithstanding some persons have asserted that this oil is pernicious rather than useful, we think that, as an external stimulant, it is of some importance; but we do not advocate its internal use.

BRICKLAYER, an artisan whose business it is to build with bricks. The work of the bricklayer cannot be well executed either in very dry, or in frosty weather. In building with bricks care ought to be taken that the bricks be laid so as to *break the joints* in every course, that a good bond be made to render the whole wall firm.

BRIDGE, a construction of stone, timber, or iron, consisting of an arch or arches, and built over a river, canal, &c., for the convenience of passage. A bridge built of stone of a proper quality is the strongest and most durable; but latterly iron bridges have come much into fashion. The abutments and piers of such bridges consist of stone; the arches and railing, or balustrades, are the parts composed of iron.

The only bridge for many centuries over the Thames at London, was what is called London-bridge, an awkward and inconvenient structure as far as relates to the arches and water-way. During the last century Blackfriars and Westminster bridges were built; which,

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as well as London Bridge, are of stone.

In the present century three other bridges have been built over the Thames at London. The most superb, composed of granite, is the Strand Bridge. It consists of nine equal arches, but the bridge itself is perfectly level. The expense of building this bridge is said to be about one million sterling.

Another, called the Southwark Bridge, is just completed. It consists of three iron arches; the centre one is 240 feet span; the others 210 feet each. The balustrades, or railings, are also of iron.

The Vauxhall Bridge is the third lately built; its arches consist of iron, and also the balustrades. It is by no means so good or so elegant a structure as the last-mentioned.

Iron bridges are also to be seen besides, in various parts of England; at Colebrook Dale;—at Buildwas;—at Sunderland;—at Bridgewater, and at Bristol.

As long as such bridges are secured from the operation of rust by paint or other covering, and provided also that they are secured from the action of salt water, their durability is undoubted. But we know that, when cast-iron remains for a long period immersed in the water of the sea, its properties become changed, and it is, as it were, rotten; being so soft that it may be easily cut with a knife. In constructing bridges, therefore, of this material, its contact with salt-water ought by all means to be prevented.

A very ingenious bridge, called an *Iron-hanging-bridge*, to be made of wrought iron, and to consist of one arch of 560 feet span, is about to be erected over the Menai strait, between the Isle of Anglesea and Carnarvonshire, by the direction of Mr. Telford, under the authority of parliament. It is to be level, and one hundred feet above the water: three stone arches on each side will connect it with the shores. The foundation of the abutments will be on solid rock. The expense is estimated at only 70,000 pounds.

In the structure of bridges, one of

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the most important considerations is to build the piers or abutments so as not to obstruct the water-way; for want of this in the building of London-bridge, many lives are annually lost.

Several patents have been obtained from time to time, by different persons, for improvements and inventions in the structure of bridges, but we cannot detail them.

BRIDLE, a contrivance made of straps of leather and pieces of iron for the purpose of keeping a horse in subjection to the will of the rider.

Bridles are either *curbs*, double and single, or *snaffles*, made either single or accompanied with a check-cord and rein; the reins are made either of brown or black leather, quite plain, the head-stall without a nose-band, or any ornament of ribbon in front.

The curb-chain and its application are well known. The double bridle has two bits, snaffle and curb, and two reins. The use of a curb-bridle, which is thought the best for road service, is to bring the horse's head in, to lift up his fore-quarters, and set him sufficiently on his haunches. The curb is to be used where the stride is to be repressed, as in the trot and canter; in the walk and gallop the snaffle is ever the most fit. In the use of the double-reined and double-bitted curb-bridle, care should be taken to use the curb-rein only occasionally: for if the horse be constantly curbed, his mouth becomes so hardened, that the curb is at last of no use. The single curb-rein, for the same reason, is a cruel, foolish, and useless contrivance.

BRIMSTONE, the common name for sulphur. The last is on every account the most appropriate. See **SULPHUR**.

BRINE, is water impregnated with saline particles. Brine made according to the common rule, that *it should bear an egg*, may be sufficiently strong for common purposes. But for preserving meat, fish, and butter during long voyages, it ought to be boiled down till the salt begins to crystallize, which is known by a thin skin appearing on the surface of the liquor while it continues over the

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fire. The water being then completely saturated with salt, the brine or pickle is perfect.

BRINE-PANS. The pits wherein salt-water is retained and suffered to stand exposed to the heat of the sun, so that the water may evaporate and leave the salt behind.

BRINE-SPRINGS, are fountains which flow with salt-water. Of these there are many in various parts of England. The most remarkable brine-springs are at east Chennock in Somersetshire; another at Leamington in Warwickshire; at Barrowdale in Cumberland; at Salt-water Haugh in the county of Durham; at Weston in Staffordshire; at Droitwich in Worcestershire; and at Namptwich, Northwich, and Middlewich in Cheshire. These last, although of unequal strength, produce on an average four ounces of salt from every pound of brine.

Brining of Corn. See **SMUT**.

BRISTOL HOTWELL. A spring of water arising on the banks of the Avon at the bottom of St. Vincent's rocks, about one mile from Bristol. It is of a very moderate heat, varying from 72° to 76°. A Winchester gallon of this water yields only 47½ grains of solid contents, of which rather less than half are neutral salts with a basis of soda, and the remainder calcareous salts. It also holds in solution about 1-7th to 1-8th of its bulk of a gas which is chiefly carbonic acid. When fresh it is inodorous and sends forth numerous air-bubbles if poured into a glass.

Bristol hot-well has obtained great celebrity in the cure of a number of diseases of very opposite natures; in several disorders of the alimentary canal, in the dyspeptic symptoms which so often impair the health of the European who has long resided in hot climates, in bilious diarrhœa, and slight dysentery; also in the cure of diabetes, or at least in affording considerable relief. But the high reputation which this spring has acquired is above all in alleviating some of the most harassing symptoms of pulmonary consumption. That, however, the salubrity of the air of its immediate

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neighbourhood, and the beautiful scenery, have had their share in these alleviations of disease we scarcely doubt; the latter by the introduction of tranquillizing and agreeable sensations to the mind.

The season for the hot-wells is generally from the middle of May to October: but the summer months are preferred merely on account of the concomitant benefits of air and exercise. A gentle laxative is the only necessary preparative to the drinking of the water. Early in the morning, and two hours before breakfast, is the most proper time for taking it; the usual dose is two glasses, spending about an hour in gentle exercise between each dose. Two glasses are afterwards taken between breakfast and dinner; these are generally found sufficient for one day. The size of the glass varies from a quarter to half a pint; the latter is reckoned a full dose. Hectical patients are recommended to begin a course of these waters with a glass of asses' milk, and gradually increase the quantity from half a pint to a pint.

BRITISH OIL. The following is the composition of this quack medicine: take of rectified oil of amber eight ounces; of oil of brick six ounces; of balsam of sulphur two ounces: mix them together.

British oil has been, like most other medicines of this kind, recommended for a variety of diseases: amongst others, for consumptions, coughs, and any inward disorder; but the patient who relies upon it for "consumptions, and any inward disorder" will find himself disappointed. It may sometimes be of advantage in old and obstinate coughs, when the lungs are not diseased; and it is probable that, if dropped into the ear, or applied on lint, in some cases of deafness, it may be of use; but we calculate more upon its powers as an external application in rheumatic, and other pains of the limbs, applied to the part, and well rubbed into it. The dose, if taken internally, is from 15 to 30 drops on a lump of sugar.

British Wines. See **WINE**.

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BROAD-CAST, a term in husbandry, used to denote a particular mode of sowing grains and seed: which is done by scattering them over the surface of the ground by the hand.

Although the broad-cast method of sowing continues to be used on many occasions, and for wheat and some other grain still pretty generally, yet there can be no doubt of the advantages of the drill method for the culture of most kinds of corn. See **DRILLING**, **HUSBANDRY**, and **BARLEY**, and other grain, &c., in the order of the alphabet.

BROCCOLI, *Brassica Italica*, a species of cabbage, cultivated for the use of the table. There are several kinds of this plant, particularly the purple, the white, the black broccoli, &c. But the purple is preferable to the rest. For the particular culture of this plant see **CAULIFLOWER**.

BROKEN KNEES. A well-known accident to which awkward horses are frequently, and even the best and most active occasionally liable.

After washing the wound carefully with warm water, apply a poultice, if the injury be considerable, and renew it morning and evening until the swelling and inflammation of the knee have subsided; stimulating applications will then be proper, such as a solution of sulphate of copper, (blue vitriol) or sulphate of zinc, (white vitriol). When the wound does not heal under this treatment try the following ointment: yellow basilicon four ounces; oil of turpentine two fluidrachms; red precipitate, finely powdered, half an ounce; mix them together. Should the new flesh rise above the surface, sprinkle on it some finely-powdered burnt alum. In slight cases of broken knees, it will be sufficient to wash the part several times a day with a cold solution of acetate of lead, about one ounce to a quart of water. This will remove any inflammation or swelling, which the blow may have produced. Camphorated mercurial ointment may then be applied to hasten the growth of hair on the part. It is scarcely necessary to add, that du-

ring the healing of the knees, the horse should not be ridden: he may, however, be occasionally led about to preserve the motion of the joint.

BROKEN - WIND. A complaint affecting the breathing of horses, and in which the lungs are generally more or less affected, although, sometimes, on dissection, the disease of the lungs has not been apparent.

This complaint is generally supposed incurable; but it may be often alleviated, and sometimes to such a degree as to be scarcely perceptible. Constant attention, however, is necessary with regard to food, &c., which should be rather of an opening kind; such as bran mash, with a quantity of oats proportioned to the work of the horse; green food may also be given in moderate quantity, and also carrots. When the horse is ridden, his exercise should be at first moderate, and he should not be used immediately after feeding. Small doses of diuretic medicine given daily, or every other day, for a short time, so as to increase the urine in a moderate degree, have afforded great relief. But care must be taken not to keep up excessive staling, as the kidneys might thereby be injured. Horses which have but indifferent appetites either for hay or water, should be allowed green food; but in broken-wind this is not often the case; for, more commonly, they have almost constant thirst; and, unless prevented by a muzzle, will eat even their litter. This disease commonly happens to horses which have voracious appetites; and when this is the case, the horse should be limited in his diet, and a secure muzzle must be employed.

Bronchia. See TRACHEA.

BRONCHOCELE, a tumour on the fore-part of the neck, seated between the trachea and skin. It is sometimes called Derbyshire neck, from its being more common in that county than other parts of England. It is also a frequent disease among the inhabitants of the Alps, and other mountainous countries.

It is most probably a dropsical affection of the thyroid gland. The swell-

ling is, at first, soft without pain, or any evident fluctuation, and the skin retains its natural appearance; but as the tumour advances in size it becomes equally hard; the skin acquires a copper colour, and the veins of the neck become varicose; the face becomes also flushed, and the patient complains of frequent head-achs, as well as stinging pains through the body of the tumour.

In the cure of this complaint frequent frictions are found useful, especially when employed early; saponaceous and mercurial plasters have also, in some cases, proved serviceable; and repeated blisters have been known to retard its progress: but in the enlarged and scirrhous state of the tumour no remedy yet known is powerful enough to discuss it. When the disease is far advanced, the removal of the tumour by an operation is attended with great danger, and, therefore, the cure should rather be attempted by internal remedies; and these have been very often found to succeed when the disease has not been of long standing. The internal use of burnt sponge has, for some time, been considered as a most efficient remedy. It is usually given in the following manner: take of burnt sponge in powder half a drachm; of mucilage of gum arabic a sufficient quantity to form the sponge into lozenges. When the tumour appears about the age of puberty, and before its structure has been too morbidly deranged, a pill, consisting of a grain or two of calomel, made with crumb of bread and mucilage of gum arabic, must be given for three successive nights, and on the fourth morning a saline purge. Every night afterwards for three weeks, one of the lozenges should, when the patient is in bed, be put under the tongue, suffered to dissolve gradually, and the solution swallowed. The disgust arising from this remedy soon wears off. The pills and purge are to be repeated at the end of three weeks, and the lozenges had recourse to as before; and this plan is to be pursued till the tumour is removed.

Another method of taking the burnt

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sponge in this disease, as practised by Dr. Bate of Coventry, has also had its advocates, but it savours too much of empiricism.

The following powder is also a useful medicine in this complaint: take of red sulphuret of mercury one scruple; of burnt sponge in powder fifteen grains: mix them together. This powder is to be taken for one dose, an hour or two before breakfast, for a fortnight or three weeks. The patient is then to abstain from medicine for a fortnight, at the end of which he must return to the powder as before, and also take the calomel pill, made as above; or a pill composed of from five to ten grains of the mercurial pill of the London Pharmacopœia, according to the age and strength of the patient, and according to its immediate effects on the bowels: for it should by no means be suffered to operate violently as a purge.

Attention to the general health will be very necessary in this disease. If general debility be present, and the appetite bad, with other dyspeptic symptoms, all flatulent and indigestible food must be, of course, avoided.

BRONZE, a mixed metal much used in casting statues, &c. It consists of from 8 to 12 parts of tin with 100 of copper.

BRONZE also denotes a colour prepared to imitate bronze. See **BRASS-COLOUR**.

BRONZING, the art of imitating bronze, which is done by covering the objects to be bronzed with copper dust or leaf, in the same manner as gold-leaf is applied in gilding.

Brooding. See **HATCHING**.

BROOK, a little river, or small current, generally of clear water with a stony or pebbly bottom. It is distinguished from a river by its shallowness, and from its stream not being uniform, either in quantity, rapidity, or duration.

Brook-lime. See **SPEEDWELL**.

BROOM, or *Spartium*, in botany, a genus of plants containing twenty-five species, chiefly natives of Barbary and the south of Europe; one common to

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our own dry fields. The following are cultivated:

The *Spartium scoparium*, or common broom, formerly employed medicinally under the name of *Genista*. See below.

The *Junceum*, or Spanish broom, a beautiful flowering shrub.

The *Radiatum*, or Starry-broom.

The *Monospernum*. White-flowered, single-seeded broom.

The *Sphaerocarpum*. Yellow-flowered, single-seeded broom.

The *Scorpius*. Scorpion broom.

The *Angulatum*. Angular-branched broom.

Spinosum. Prickly broom.

The flower buds of many of these are, in some countries, pickled and eaten as capers. The branches are employed in making besoms, or brooms, and tanning leather; the old wood furnishes the cabinet-maker with beautiful materials for veneering; the tender branches are sometimes mixed with hops for brewing; and the macerated bark may be manufactured into cloth.

The three first sorts are hardy; the rest tender, especially when young. They may be all raised by seeds; but the double-blossomed are best propagated by layers and cuttings.

The tops of the common broom are diuretic and cathartic; the seeds are said to be emetic. The effects of this plant have been very long known to the common people, and both Mead and Cullen found them useful in dropsy. The usual mode of exhibiting them is in the form of decoction, to be made by boiling one ounce of the green tops in a pint of water down to half a pint: two table spoonfuls to be given every hour till it operates by stool. It seldom fails to operate both by stool and urine; and by repeated exhibition every day, or every second day, some dropsies have been cured.

An extract has also been prepared from the tops of the common broom, which is said to be diuretic, but its efficacy is doubtful, and it is not therefore, often employed; its dose is from half a drachm to one drachm, or more.

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BROOM-GRASS, or *Bromus*, a genus of plants containing thirty-three species, twelve of which are indigenous to our own country, and the rest chiefly natives of Europe.

The *Secalinus*, or smooth rye broom-grass; the *mollis*, or soft broom-grass, lob-grass, or oat-grass; and the *pinnatus*, or spiked heath broom-grass, are the principal. The last is much relished by cattle of every description, but especially sheep and goats. Notwithstanding, the different species of broom-grass deserve rather the appellation of weeds, to the extirpation of which the efforts of the farmer ought to be directed, particularly from corn fields.

BROTH generally implies a liquor in which the flesh of animals has been boiled; but it is applied occasionally to other liquids; such as barley-broth, &c.

There are different opinions as to the real value of broth, as an article of diet; and we know that some recent experiments upon dogs, have proved that a constant food made of nutritious animal broth, and the animal not being suffered to eat any thing else, he soon became dropsical; another dog who lived upon the fibrous parts of the animal matter did well. Some physiologists have, therefore, concluded, that broth is not so nutritious as the fibres, or fibrous part of animal matter. But, however, although the experiments upon dogs may be decisive in regard to them, we cannot by any means agree that they are so, if applied to the mode of support for the human body. The dog, we know, has certain peculiarities in his digestive faculties, which are very different from those of our own: one is that of eating and digesting bone; and almost all dogs which are permitted to choose their food, do so. We make these observations, because some writers on diet have reprobated broths; but, notwithstanding, we do not hesitate to aver, that a strong decoction of any animal food, which is itself proper for the use of man, affords a very valuable variety to the food of even persons in health; and to the valetudinarian, and others, whose

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stomachs cannot bear solid food, broths are indeed of primary importance. But by broth, our readers must decidedly understand that we do not mean any thing in the shape of pot liquor, or other weak potation. One pound of the lean of animal food, boiled in three pints of water, with the cover of the vessel off, till it is reduced, after being strained, to a pint and a half, or less, will make very good broth, and such as, when used on suitable occasions, and with, or without baked bread, herbs for seasoning, &c. will be found exceedingly nutritious. When we mention pot-liquor, we by no means wish to speak with contempt of that article: for if the pot liquor in which any fresh animal food has been cooked, be boiled down to one half its quantity, or less, there can be no doubt of its value as broth: our domestic economists would do well, therefore, to turn their attention to this subject. If the liquor, for instance, in which a leg of mutton has been boiled, be boiled away one half, or more, after removing the fat, an excellent broth will be the result. After all, our readers are not to suppose that we recommend broth to be taken always, and in preference to more solid food; by no means. Variety of food, if properly chosen, is not only pleasant, but agreeable to the stomach, as well as to the palate, and more conducive to the support of the body; for it is well known that the constant use of the best viands palls by repetition.

Which are the best broths deserves some consideration, particularly for the valetudinarian. Beef-broth, such as we have described under the article **BEEF TEA**, unquestionably holds the first place; and next to that mutton broth; veal broth, and chicken broth, are by no means so good; they afford, however, a variety, and provided they are not weak, will be sometimes of service, particularly where a strong inclination is evinced for them; and although inclination is not in all instances to be complied with, yet, in food, it is by no means to be wholly disregarded. Pork broth, notwithstanding it has

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been recommended by some of the faculty, is not good ; nor can any broth from fish, eels perhaps excepted, be spoken of with commendation.

BRUISES, or contusions, should never be neglected, as alarming consequences may sometimes arise from them. Bruises received on the head, pit of the stomach, hip, or the knee, are the most dangerous. A violent inflammation in consequence of injured nerves, or the contusion of blood vessels, sometimes occasions the mortification of parts, which, if the accident be neglected for a day or two, or even for many hours, the most skilful treatment cannot retrieve. The wisest course, therefore, is to take the advice of some experienced medical man.

When the contusion is slight, fomentations with vinegar, or of goulard and water, repeatedly applied to the part, will generally relieve it ; but if it be of a more serious nature, a liniment, composed of two ounces of olive oil, and half an ounce of solution of sub-carbonate of ammonia ; or arquebusade water, may be frequently rubbed on the part. If, notwithstanding these applications, the bruise is disposed to suppurate, poultices will then be necessary ; and the treatment must be the same as under the article **ABSCCESS**, which see. **Dr. BUCHAN** recommends cataplasms of fresh cow-dung, to be applied to the violent contusions occasioned by blows, falls, bruises, &c. and he says that he never knew them fail to have a good effect.

As soon as a violent bruise, or contusion, has been received, the safest course is to abstain immediately from animal food, and every kind of stimulating liquor. This alone may prevent the inflammation which might otherwise occur. See **INFLAMMATION**.

BRUISES IN HORSES. In severe bruises, bleed, and give a purgative, and foment the part, or apply a poultice ; should matter form, it is to be treated as an abscess ; but if a hard callous swelling remain, an attempt should be made to disperse it, by rubbing it well with some stimulating

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embrocation, as : soap liniment four ounces ; solution of ammonia, one ounce ; mix them. Or, camphor and oil of origanum, of each two drachms ; of olive oil, two ounces ; of solution of ammonia, one ounce ; mix them. Should these fail, recourse must be had to a blister. For bruises on the withers of a horse, see **BACK-GALLED**.

BRUISING beans, peas, or oats, for the feeding of horses or other animals, is a practice much to be recommended ; it having been found by experience, that feeding horses with bruised corn, seven bushels will go at least as far as eight of the same quality given whole. This saving is at all times an object of importance, but more especially in times of scarcity.

BRUNONIAN SYSTEM. The physiological and medical system of the late **Dr. John Brown**, a Scotch physician, who published, about the year 1780, a work in Latin, which he called *Elementa Medicinæ*, or Elements of Medicine. An edition of this work in English, by the author, with notes by the late **Dr. Beddoes**, is particularly deserving of the reader's attention.

Dr. Brown arranges all general diseases under two orders. Under one, which he calls *sthenic*, he places all those diseases which arise from too great action of the heart arteries, beyond, or above sound health ;—under the other, which he terms *asthenic*, he arranges all those which arise from diminished action of the heart and arteries, beneath, or below sound health. To these two orders of diseases **Dr. Brown** refers every general disease which affects the human frame. In the proper abstraction or application of certain powers which he calls *stimulants*, (under which term not only medicines commonly so called, but heat, light, air, diet, the passions of the mind, and in short every thing, whether mental or physical, having power or influence on the human frame, are comprehended,) depends the cure of every disease. Instead of a long list of medicaments usually kept as specifics for an infinity of diseases, of the same

order in fact, but under different names, and denominated usually from some symptom, a small number only will be found to be necessary. Upon arriving at the bed-side of the patient, the practitioner has, according to Dr. Brown, only to ascertain to which order of diseases the complaint belongs, and having done this, his further skill is to be displayed in the abstraction, or addition of stimulants, to effect a cure of the complaint: and this is the whole affair!

Dr. Brown calls that principle on which life depends, the *excitability*. The action of the heart arteries, nerves, &c. &c. he calls the *excitement*. Upon the due administration of stimulants, such as food, the passions of the mind, &c. will the excitement be kept up, and an undue increase of the excitability be prevented. By too great excitement, weakness is induced, by exhausting the excitability; so when the exciting powers, or stimulants, are withheld, weakness is also induced, by permitting the excitability to accumulate: the former he calls *indirect* debility; the latter *direct* debility.

These are the outlines of Dr. Brown's system; and although it cannot be considered by any means a perfect one, we can have no hesitation in saying, that it is by far the best which has yet appeared. Some modifications of it have been attempted by several physiologists, but not with that success which could be wished. Dr. DARWIN in his *Zoonomia*, approaches near to it: indeed, we can scarcely consider Darwin's but as the same system, with a new set of terms.

The simplicity of Brown's system, is admitted to be one of its chief recommendations; and although few medical men seem willing to acknowledge it, there is certainly a disposition, even amongst them, tacitly to admit, that in general diseases there are but two orders: one arising from what is commonly called an inflammatory, or as Brown has it, *sthenic* diathesis of the system, the other from debility, or *asthenic* diathesis. The cure of the former, consisting in blood-letting, purging, and other evacuations, and the

avoiding of food, or at least food of a stimulating kind; and the cure of the latter consisting in the administration of stimulating medicines, in avoiding all debilitating evacuations, and in the use of nourishing food, particularly of the animal kind.

If Dr. Brown, therefore, has not discovered the true theory of medicine, he has, we think, demonstrated the method by which it may be attained; we cannot doubt that, with this theory for our guide, medicine has made, and is making rapid advances to that state of simplicity, in which it is desirable to find it, and by which the knowledge of the *art of healing*, and the more important one, the PREVENTION OF DISEASE, may be attained by all, and be taught as a regular branch of education in our schools. Till this is the case, the public must be content to be occasionally imposed upon by pretenders to the art, and by the disgusting artifices of quacks. We shall do our utmost in this work, to divest medicine of all unnecessary pretension and mystery, and quackery, as much as possible, of its harm.

BRUSH, a domestic implement, consisting generally of a collection of hairs, or bristles, fastened in a frame of wood, bone, or ivory, with or without a handle, and used for various purposes. Latterly, however, brushes are not only made in part, with split whalebone instead of hairs, but some are wholly composed of this material, the only objection to which is, that it wears out much sooner than bristles.

Flesh-brush, an instrument frequently employed for increasing the circulation of the fluids in languid habits, especially in paralytic and rheumatic cases, in order to relieve pain and un-easiness of the skin. The simple and useful operation of friction, may, however, be performed with equal care, and more attention to cleanliness, by a piece of flannel, than by a flesh brush, because the perspirable matter adhering to the brush, is then spread from one part of the body to another; whereas, flannel may be frequently

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turned, and afterwards washed as often as is necessary.

Stomach-brush, a curious instrument which excited considerable attention about the middle of the last century, but which has never been much used; nor can we say a great deal in its favour.

Tooth-brush, a brush used for the purpose of cleansing the teeth. Some medical men disapprove of the use of tooth-brushes, whilst others as strongly recommend them: a towel or other cloth, will sometimes cleanse the teeth tolerably well, but as the interstices cannot be cleaned by such means, and as moderate friction of the gums contributes to their health, the use of a brush must be manifestly advantageous. Certain it is, that the teeth ought, by some process to be cleaned every day, and upon the whole, we know of no better assistant for the purpose than a brush. See TOOTH-POWDER and TEETH.

We mention here the *hair-brush*, and *nail-brush*, as useful appendages in that system of cleanliness, upon which the health and well-being of the body in a great measure depend, and which gives to the exterior appearance a perpetual letter of recommendation.

BRUTE, a general name for all animals except mankind. Among brutes, the monkey kind bears the nearest resemblance to man, both in external shape, and internal structure, but more in the former than in the latter. Amongst the monkey tribe, the *orang outang* is the nearest approach to man. The structure and economy of brutes are the objects of what are called **COMPARATIVE ANATOMY**. See that article.

It is not easy to define the essential characteristics of brutes, by which they may be distinguished from man, except as to their exterior appearance. Here indeed, the distinction is striking and manifest.

Notwithstanding some philosophers have attempted to draw a line between the conduct of brutes and man, by denominating that which impels the former instinct, and the latter reason; we think, from numerous facts which are

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constantly presented to us, in the conduct of animals under our immediate cognizance, that they all reason more or less, and that the intellectual difference between man and brutes, consists principally in *degree*. The degree is undoubtedly great; but brutes not being endowed with the faculty of communicating their thoughts by speech to us, the probability is, that they know more than they can show.

That brutes possess reflection and sentiment, and are susceptible of the kindly, as well as the irascible passions, independent of sexual attachment, and affection for their young, is evident from numerous instances daily observable in different animals, particularly the dog. Of those and other sentiments, such as pride, and even a sense of glory, the elephant exhibits proofs equally surprising and indubitable.

Nothing, therefore, can be a greater reproach to man, than cruelty towards those dumb and helpless animals, which, in numerous instances, contribute not only to his very existence, but to his conveniences, his pleasures, and amusements: and which, in general, return kind usage with fidelity. An inculcation of *humanity to the brute creation*, ought to form, as it already does, in well-regulated families, and seminaries, a part of the education of every individual: the transition from cruelty towards brutes, to that of our own species, is easily made. He who is deficient in tenderness for the one, will not often be found overflowing in benevolence for the other.

BRYONY, or *Bryonia*, a genus of plants containing nineteen species, two of which are natives of our own country.

The *Bryonia alba*, or *dioica*, white bryony, or wild-vine, is found in our hedges, with yellowish green flowers, red berries, and palmate leaves. The stem is seven yards in length. The root is perennial, large, often a foot in circumference. It has a very nauseous biting taste, and disagreeable smell. It was formerly given in dropsies, but

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is little used in modern practice. Externally, the fresh root has been employed in cataplasms, in the cure of hard and oedematous tumours, in stagnations of blood from external injuries, and in ischiadic and other rheumatic pains.

Decoctions made with one pound of the fresh root are said to be the best purgatives for horned cattle.

The *Tamus communis*, or black bryony, is also indigenous to this country. It has a large root sending forth several stems, with large heart-shaped dark green leaves, greenish flowers, and red berries. Its root is like the white bryony, acrid and stimulating.

The following exotic species merit cultivation on account of their beautiful appearance when full of fruit; the *Africana*, the *racemosa*, the *cretica*, and the *variegata*, or American bryony.

BUCK-BEAN, or *menyanthes*, a genus of plants comprising five species, one a native of the Cape; two of India; two of Europe, and found on the river banks, or in the marshes of our own country. The following are the chief:

The *trifoliata*, or marsh trefoil, water trefoil, marsh cleaver, or trefoil buck-bean, grows in moist marshy places, in many parts of Britain, and its very beautiful flowers appear in June and July.

The leaves of this plant have a faint, disagreeable odour, and an intensely bitter, nauseous taste, which is extracted by infusion in water; and on this account they have been recommended as a substitute for hops.

Buck-bean is tonic, diuretic, and purgative. It has been used with seeming benefit in remittent and intermittent fevers, rheumatism, arthritic affections, and in cachetic and cutaneous diseases. In large doses, it is apt to excite vomiting. The dose of the dried leaves in powder, is from one scruple to a drachm; or of an infusion, made with half an ounce of the dried leaves, in half a pint of boiling water, from one fluidounce, to one and a half, three or four times a day. It is advisable to add some aromatic, such as cloves,

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cinnamon, or ginger, to these different preparations.

The *nymphæoides*, or fringed buck-bean, or lesser yellow water-lily, grows in large ditches, and slow streams. Its fine yellow blossoms appear in July and August.

The *cristata*, a native of the East Indies.

Buck's-horn. See PLANTAIN.

BUCKTHORN, or *rhamnus*, a genus of shrubs containing thirty-two species, scattered over the globe; two indigenous to our own country. Of these some are spinous, some prickly, and some are unarmed. The following are cultivated.

The *catharticus*, *spina cervina*, or purging buckthorn. The stem strong, wood, twelve or fourteen feet high; the bark of the young shoots, a smooth greyish brown, of the older, darker and rougher. It grows in woods, hedges, and near brooks; and flowers in May and June. The flowers come from the same buds as the leaves, and frequently, but not always, they are male and female upon different plants. The fruit is a small, round, black, four-seeded berry, about the size of a pea, compressed on one side. The odour of these berries is faint and unpleasant; the taste bitterish, acrid, and nauseous. They are very succulent, and yield by expression, a deep green juice, or a purple juice if they be gathered late in the autumn. It is found in various parts of England.

The bark is emetic; the berries, or their expressed juice, are briskly cathartic, but their operation is not the most agreeable. They were formerly much used as a hydragogue purgative, but are now seldom prescribed. The dose of the recent berries is one scruple; of the expressed juice, one fluidounce, or one drachm of the dried berries.

Syrup of buckthorn is made thus: Take of the fresh juice of buckthorn berries, four pints; ginger-root sliced, allspice bruised, of each half an ounce; refined sugar three pounds and a half.

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Set apart the juice for three days, that the fæces may subside, and strain it. To a pint of the clear juice, add the ginger-root and allspice; then macerate in a gentle heat for four hours, and strain. Boil down the remainder of the juice to one pint and a half, mix the liquors and add the sugar, gently boiling the whole afterwards to a proper consistence. Some persons will use raw sugar instead of the refined: we believe it is equally, if not more efficacious.

Syrup of buckthorn is a brisk cathartic, but from the unpleasantness of its operation, it is not often used, except by the common people, and as a horse medicine. The dose is from half to one fluidounce, drinking freely of tepid demulcents during its operation.

It is used in horse medicines principally as a medium for making purging powders, and other drugs, into balls.

The wood of this shrub is one of the finest for turnery produced in this climate; it sometimes grows to a size of six or eight inches in diameter. From the juice of the unripe berries, with the addition of alum, a yellow; and from the ripe berries, a fine green colour is obtained. **SAP GREEN** is made from this juice. See **COLOURS**. The French miniature painters obtain also a delicate and highly-prized green from the berries, which they call *verd-de-visa*.

There is another variety of this species which is a lower shrub, and hence denominated dwarf buckthorn.

The *frangula*, alder buckthorn, or black alder, is an upright tree, branchy, and about twelve feet high; the flowers appear in June; the berries ripen in September. A native of our own woods. Although it produces dyeing matter both from the bark and berries, it is not equal in any respect to the first mentioned buckthorn. Decoctions, however, of the bark of this tree in table-beer, are very certain and brisk purgatives in dropsies, or constipations of the bowels of cattle.

The *colubrinus*, or pubescent buck-

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thorn. A native of America, and the West Indies.

The *alaternus*, or common alaternus; a shrub unarmed, with diceous flowers. There is a variety with alternate shining evergreen leaves. A native of the south of Europe. The fresh branches, or young shoots, produce a good yellow dye. There are also other varieties with variegated leaves, or striped, called (in the former case) bloached phyllyrea by the nurserymen, and in the latter, gold or silver-striped alaternus, according to the colour.

The *infectorious*, or narrow-leaved buckthorn; an evergreen plant, indigenous to the south of Europe.

There are various other species enumerated by many botanists, as belonging to this genus, and especially palmyrus (Christ's thorn,) lotus, jujuba, spina Christi; but as these have a drupe with a one or two-celled nut, instead of a berry, they are jujubes, rather than buckthorns.

All the above-named species of the buckthorn may be increased either by seeds, layers, or cuttings.

BUCKTHORN-SEA, or *hippophæ*, in botany, a genus of shrubs containing two species, as follow:

The *rahnnoïdes*, with lanceolate leaves, the stem shrubby with a dark brown bark, branching irregularly eight or ten feet high. It flowers in June or July. The berries a fine red, ripen late in autumn.

The *Canadensis*, with ovate leaves, silvery beneath: a native of Canada, and about the size of the former.

The first species is eaten by goats, sheep, and horses, but refused by cows. It may be raised from seeds, but more expeditiously by planting layers, or propagating it from the very abundant spreading roots. Of the second no sufficient trial has been made.

BUCK-WHEAT, Brank, or *polygonum fagopyrum*, was first introduced into Europe from Asia, about the end of the 15th century. It rises with an upright smooth branchy stem, from about a foot to half a yard high; its

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leaves are heart-arrow-shaped; the branches terminated by clusters of whitish flowers; the seeds with even angles.

Buck-wheat may be cultivated with advantage, in various ways. It will grow on most sorts of soils, provided they be sufficiently dry, and tolerably fertile; but it answers best on those of the thinner and sandy kind. Although it is yet very little known to farmers in general, it has numerous excellencies. It is said to be as valuable as barley, and where it is known, it sells at the same price; it also equals it for fattening hogs and poultry. For sowing with grass seeds it is the best of all crops, as it gives them the same shelter as barley or oats, without robbing or exhausting the land. In the preparation of the land it is less difficult than many other plants. It is best to plough and harrow the land well in April, for the reception of the crop in the following month, or later; a fine clean state of tilth being the best, as grass seeds are most commonly sown with it.

The proportion of seed that is necessary for a crop of this sort, is about a bushel to the acre. It may be sown at different times in the spring and summer season; as in May, about the end of June, or beginning of July. It being a tender plant in its early growth, it should never be sown so early as to be in danger of frosts. It is generally sown broad-cast, and well harrowed in.

As this kind of crop usually covers the ground well, much attention to its culture, after being sown, is not necessary.

The crop is either suffered to remain for seed, cut and used green for cattle, or ploughed under as manure. Its usual produce is from four, or five, to seven sacks per acre. If the grain be ground it affords a white flour. In feeding cattle it may be mown twice in the summer. If given green to cows it is said to increase their milk very considerably; and if to hogs, it produces an inebriating effect upon them.

It is strongly recommended as a crop after tares, and as preparatory to wheat. There is no doubt where barley, or other

BUD

spring corn, cannot be put in sufficiently early, that the culture of this plant may be adopted with great advantage.

In harvesting it is apt to shed; of course when ripe, it is best to cut it while the dew is upon it, and leave it to dry in the field. In some cases, it should likewise be carted in the dew for the same reason. It ripens generally about the latter end of September.

There is a variety of this grain known under the name of Siberian buck-wheat, which appears to possess considerable advantages over the former.

The utility of buck wheat as a farinaceous food for man has not been yet clearly established. But there is little doubt that it is equal, if not superior, to oats for horses; and that for fattening hogs and poultry it is peculiarly excellent; for, although the green plant will intoxicate the hog, the seeds produce no such effects on him. But it is said, that sheep feeding upon this vegetable become unhealthy; it is, nevertheless, relished by cows and goats.

BUCK-WHEAT, the climbing, black bindweed, or climbing snakeweed, or *Polygonum convolvulus*, a native vegetable, growing about corn fields, gardens, and hedges; and flowering in June and July. Its seeds are said to be as good as those of the two preceding. But its stalks are creeping, and, therefore, it is not calculated for field culture: although it is a hardy plant and bears cold better than the exotics before mentioned.

BUD, in botany, the winter receptacle of leaves and flowers, on the stems and branches of trees, and covered with scales, or with a resinous varnish, to protect its contents from the winter cold. Most plants in cold countries, but scarcely any in hot climates, have buds. The bud is formed at the bottom of the interior side of the leaf-stalk, and when the leaf has effected all its offices of vegetation it falls off and leaves the bud naked. This happens to most deciduous trees and shrubs, sooner or later, in the summer and autumn, but not to evergreens till the spring.

BUD

As plants are supposed to bear a striking analogy to animals, they may not improperly be reckoned both viviparous and oviparous: the seeds being considered as the egg, and the bud as the living foetus, or infant plant, which renews the species as certainly as the seed; each bud containing in itself the rudiments of the plant, and would, if separated from its parent vegetable, become, under suitable management, in all respects similar to it.

Such is the wonderful fertility of nature, that LINNÆUS made a calculation, from which it appears, that in a trunk scarcely exceeding a span in breadth, ten thousand buds may be produced. How great then must be the number of plants which may be raised from one large tree! See LEAVES.

BUDDING, or *Inoculation* of vegetables, particularly fruit-trees. This consists in inserting the bud of one species of a plant into the stock of another species, both being of the same genus.

The proper season for this process is from the middle of June till the middle of August, according to the state of the season, and the particular sort of trees to be increased: the exact period, however, may be easily ascertained by trying whether the buds may be easily separated from the wood. The rule commonly attended to upon this subject, is to examine whether the buds are formed at the extremity of the same year's shoots, which is a sign of their having completed their vernal growth. The first sort commonly inoculated is the apricot, and the last the orange-tree, which should never be touched till the middle of August. In performing the operation choice should be made of cloudy weather: for, when it is performed in the middle of the day in very hot weather, and a bright sky, the shoots perspire so fast as to leave the buds destitute of moisture; nor should the cuttings be taken off from the trees long before they are used. If they are brought from any considerable distance the leaves should be cut off, but all the foot stalks left, and then be wrapped up in wet moss, and put into a tin box to

BUD

exclude the external air. It is also an improper practice to throw the cuttings into water, as the buds become thereby so saturated with moisture that they have no longer any power of imbibing the sap of the stock, and hence often disappoint the operator's expectation.

Budding is practised upon all the tribe of fruit-trees with drupes, or stone fruits: as nectarines, peaches, apricots, plums, and cherries. It is also frequently applied to oranges and jasmines; and upon the whole, for such kinds of trees, is generally preferable to simple grafting or inarching. It may also be adopted on wall pear-trees with advantage.

The mode of budding is as follows: Having taken off the cutting from the tree to be propagated, choose a smooth part of the stock about five or six inches above the surface, if designed for dwarfs; but if for standards, about six feet above the surface; then with a knife make a horizontal cut across the rind of the stock, and from the middle of that cut make a slit downwards, about two inches in length, so that it may be in the form of a T; but be careful not to cut too deep lest you wound the stock; then, having divided the leaf from the bud, with the foot stalk remaining, make a cross cut about half an inch below the eye, and slit off the bud with part of the wood to it; this done, with your knife pull off that part of the wood which was taken with the bud, observing whether the eye of the bud be left to it or not: for all those buds which lose their eyes in stripping are worth nothing; then, having gently raised the bark of the stock with the flat side of your penknife, clear to the wood, thrust in the bud, observing to place it smooth between the rind and the wood of the stock, and cutting off any part of the rind appertaining to the bud, that may be too long for the slit in the stock. Having exactly fitted the bud to the stalk, tie them closely round with bass-mat, beginning at the under part of the slit and proceeding to the top, taking care not to bind round the eye of the bud, which must be left open.

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When the bud has been inoculated three weeks or a month, if fresh and plump, it has certainly joined; at this time, therefore, loosen the bandage, which if it be not done soon will injure, if not destroy, the bud. The March following cut off the stock obliquely, about three inches above the bud, and to what is left fasten the shoot which proceeds from the bud; but this must continue no longer than one year; after which the stock must be cut off close above the bud.

The above is the usual manner in which budding has been generally performed; but by some recent experiments of the Rev. Mr. SWAYNE, it appears, that instead of the longitudinal incision in the bark being made downwards, it ought to be made *upwards*, so that the form of the whole incision in the bark will be that of the letter T reversed thus \perp : for, although it was formerly supposed that the sap *ascended* in the vessels of the bark, and between that and the wood; it is now ascertained that it *descends* in those vessels; the reason of the better success of this new method of leading the bud upwards to its position instead of downwards, the usual method, is obvious: the bud in the *superior* position receiving an immediate and plentiful supply of sap which is denied to it by the cross cut, obstructing and diverting the invigorating fluid from the inferior situation: we think this a very manifest improvement in the art of budding, and, therefore, most strongly recommend its adoption.

BUDDLEIA. In botany a genus containing eleven species, mostly natives of the Cape, the East and West Indies.

The most beautiful is the *globosa*, a native of Chili, shrubby with lanceolate leaves, pointed, and underneath downy white; with orange-coloured flowers. It may be sufficiently hardened, by degrees, to bear the cold of our winters; it is an ornamental shrub, and may be propagated by suckers.

BUFFALO, or *Bos bubalus*, a species of the ox, of which there are several varieties. See Ox.

BUG

BUG, in entomology, a species of the *cimex*, too well known to need any description.

The following mixture is the most effectual for the destruction of the house bug, or *cimex lectularius*: take of corrosive sublimate half an ounce; of lard six ounces. The sublimate should be first rubbed extremely fine in a marble mortar, adding a few drops of linseed oil, till its particles are minutely divided. The lard should then be added by little and little, till the whole is well mixed; and, lastly, as much more oil as will make the mixture of the consistence of a very thick paint. The bedstead is then to be taken to pieces, brushed in the joints, or what is better, the joints should be plunged into boiling water, afterwards scrubbed with a brush, and, after they are dry, some of the ointment is to be applied with a small brush to every place in which a bug can possibly be concealed. If every bedstead in a house, infested by bugs, were only taken down once a year, well washed with boiling water in the joints, and other crevices, and afterwards anointed with this mixture, few persons would have to complain of the annoyance of bugs. It is a disagreeable office, but masters of families should superintend the process of destroying bugs themselves: were this superintendence universal, the mode here recommended adopted, and not left to the carelessness of servants, we should not have occasion to witness, as we too often do, the loathsome presence of this annoying insect.

If, as is sometimes the case, bugs have insinuated themselves behind the paper of the room, we know of no effectual remedy for them there, but to strip the paper entirely off, and wash the walls repeatedly, with a mixture of quick-lime and water at suitable intervals, without any size whatever.

When an application is desirable for the *furniture* of a bed, without producing much stain, the following may answer for the destruction of bugs; but if proper attention be paid

BUG

to the *bedstead* this application can be scarcely necessary : it is rather a recipe for sloth.

Take of rectified spirits of wine half a pint ; spirits of turpentine half a pint ; mix them together, and crumble into the mixture half an ounce of camphor ; when it is dissolved shake the whole well together. It may be applied to the furniture with a sponge or brush : care must be taken not to use this mixture in the neighbourhood of a candle ; for it will very soon take fire.

We may just add, that there is no easier way of killing these troublesome insects when taken on the bed than by drowning them in urine.

BUGLOSS, or *Anchusa officinalis*, is a rough plant greatly resembling borage, and differing from it chiefly in the leaves being narrow, less prickly, not wrinkled, and in colour bluish green. It grows wild on wastes in the south of Europe, and is cultivated with us in gardens ; flowers from June to the end of summer. It is nearly similar to borage in its medicinal qualities, as well as in its external form.

BUGULE, middle Consound upright Bugloss, or *Ajuga pyramidalis*, is a low perennial plant, found wild in woods and moist meadows, and flowers in May.

The leaves are mildly astringent ; and the roots are considerably so, as it appears by their giving a black colour with sulphate of iron.

BUILDING, a fabric erected by art, either for devotion, magnificence, or domestic accommodation. The term building is also used for the art of constructing and raising edifices ; in which sense, it comprehends as well the expenses as the invention and execution of the design. It is in this last acceptation which we here propose to consider it.

Modern buildings are, in many respects more commodious and also more beautiful than those of former times, most of which were dark, low, and ill-contrived. A variety of statutes have been passed from time to time for the regulation of buildings. For the regu-

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lation of building within the Bills of Mortality, and in other specified places, an act was passed in the year 1774 which repeals and amends several former acts for the same purpose. By this act buildings are divided into seven rates or classes, for the purpose of subjecting them to various regulations respecting the thickness of walls, &c. ; and district surveyors are appointed to see the rules and regulations of this act properly complied with.

Before any building is begun to be erected, the master workman is bound to give twenty-four hours' notice to the surveyor, who is to attend and view the building, and enforce the observance of the act. The fees to be paid by the builder to the surveyor, are, for a building of the first rate, 3*l.* 10*s.* ; and for an alteration or addition 1*l.* 15*s.* ; for a building of the second rate 3*l.* 3*s.* ; and for an alteration 1*l.* 10*s.* ; for the third rate 2*l.* 10*s.* ; and 1*l.* 5*s.* ; and for a fourth rate 1*l.* 1*s.* ; and 15*s.*

In the practice of this art, in order to prevent much trouble, as well, perhaps, as expense, a plan or model of the intended building is most desirable to be had, and its conveniences and inconveniences should be particularly studied before the building is begun, so that they may be obviated, and any future alteration rendered unnecessary. A model is superior to a plan : as many persons cannot comprehend the latter without difficulty, nor sometimes even at all.

If the workmanship be agreed upon in the gross, to obviate any possibility of disagreement, you can scarcely be too minute in having the dimensions of the walls, wood-work, and plastering of every kind accurately specified. For want of this, disputes too often happen ; and it is to be lamented that unprincipled workmen will often take advantage of indefinite expressions in an agreement, to avoid doing that which they are in reason and justice bound to do.

Buildings intended solely for utility ought, in every part, to correspond with that design. On the other hand, in works merely for ornament, beauty alone ought to be regarded. But in struc-

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tures of a mixed nature, the qualities of usefulness and agreeable effect ought to be properly combined. The situation of a building is of no trifling moment. Regard ought to be had to the quality, temperature, and salubrity of the air, the conveniences of water, fuel, carriage, &c., and also the agreeableness of the prospect. A dwelling-house ought never to be erected in or near marshes or fens, nor on a boggy soil; nor too close to the banks of a river, unless it stand on a rising ground at the north-west side of the bank; nor should it be built near stagnant water. The chief rooms, studies, libraries, &c. should lie towards the east; offices which require but little heat, as kitchens, brew-houses, &c. to the south; those which require a cool fresh air, as cellars, pantries, granaries, &c. to the north: as also galleries for paintings, museums, &c. which require a steady light. The ancient Greeks and Romans generally placed the front of their houses to the south, but the modern Italians vary this rule. Indeed, in this matter, regard must still be had to the country and climate; each being obliged to provide against its respective inconveniences; so that a good parlour in Egypt might make a good cellar in England.

The materials for building are of no trifling consideration. Massive buildings, such as churches, chapels, prisons, bridges, &c. are, beyond a doubt, the best and most durable if composed of stone. And dwelling-houses, if stone, such as is obtained near the city of Bath, and of which that city is almost wholly built, could be obtained, are very good when erected with such a material; but, we think, good hard bricks are, upon the whole, as good as, if not preferable to, any other material whatever for the erection of dwelling houses, provided the walls be made of a suitable thickness. Our reasons for preferring bricks and Bath stone in these structures is, that they are both bad conductors of heat; and in the climate of Great Britain the warmth of houses is of much importance. The poor in many parts of the island construct the walls of their

cottages wholly of earth or clay mixed with straw; such walls, if kept dry, render them much warmer than houses built of stone, particularly if the stone be of a solid compact kind.

Lastly, the mortar for building should be of the best kind; but as we shall treat of this under *MORTAR*, we now merely refer our readers to that article.

BUILDING IN PISÉ, a method of building strong and durable houses, with no other materials than earth. It has been practised for ages in the south of France, and it appeared to be attended with so many advantages that several gentlemen of England made trial of it. The result of their experiments has rendered them anxious to extend the knowledge and practice of the art.

Pisé is a very simple operation. It consists merely in compressing earth in moulds or cases. But it must not, therefore, be confounded with the miserable mode of building with clay, or mud mixed with straw; as practised throughout Ireland; nor with the still better method adopted in some districts of Great Britain, which, in some respects, approaches near to buildings in *pisé*, the use of the mould for the earth excepted.

For the construction of the *mould*, take several planks, each ten feet long, of light wood, in order that they may be easy to handle: deal is the best. Let them be ploughed and tongued, or jointed close, planed on both sides, and fastened together with four strong ledges, or battens on each side; the mould must be made two feet nine inches in height; and two handles should be fixed on each side. The head of the mould, which serves to form the angle of the building, must be made of two pieces, joined at the sides; its breadth eighteen inches, and height three feet. The width of the mould diminishes gradually to the top, in order that the wall may diminish in the same degree. All the boards should be at least an inch thick. For the completion of this mould it is also necessary that there should be four joists, each

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about three feet six inches long, three inches and a half broad, and three inches thick : on the broad part must be made two mortices, one at each end respectively, ten inches and a half long, and full an inch wide, so that the interval between them may be fourteen inches. Eight posts are also necessary to be fixed into the mortices of the joists. They should exceed the height of the mould by eighteen inches ; they must, therefore, be about five feet long, including their tenons, (which should be six inches in length) and three by four inches thick. There must be also as many wedges as posts, in order to keep them tight in the mortices of the joists, and close to the sides of the wall. There should also be a gauge to determine the width of the mould above, and to regulate the diminution of the wall. A small cord is also necessary to make several turns round the heads of the opposite posts respectively, with sticks to wind them round, in order to hold the posts tight together.

Such is the process of forming the mould. In taking it to pieces the cords must be loosened, the wedges taken out, and the posts, moulds, and joists removed, to be refixed for the next operation.

The method of working with the mould is as follows. The foundation must be of masonry, eighteen inches thick, and may be raised to a foot or eighteen inches above the ground ; which is necessary to secure the walls from moisture or splash. Mark upon them the distances at which the joints are to be set for receiving the mould : which should be three feet each from centre to centre of the joists. This will leave six inches at each end, which will serve to lengthen the mould at the corner of the house. After having set the joists in their places, the masonry must be raised between them, six inches higher than the upper side of the joists. Raise the mould immediately on the masonry, as described, placing it over one of the corners of the wall. The head of the mould placed at the corner, should have eighteen inches in breadth at the bot-

tom, and only seventeen inches and a half at the top. Thus the sides of the mould will incline towards each other, and produce the necessary diminution. The wedges must then be driven in, the posts well fixed by cords, and the head of the mould secured by iron pins.

A workman should be placed in each of the three divisions of the mould, the best of whom should stand at the corner. He is to direct the work of the others, and, by occasionally applying a plumb-rule, to take care that the mould does not swerve from its upright position. The earth must be supplied in small quantities to the workmen in the mould, who, after having spread it with their feet, begin to press it with the rammer. As much as will cover the bottom to the thickness of three or four inches will be quite sufficient at a time. *Upon the proper ramming of the earth does the stability of this kind of building principally depend.* To increase the strength of the building it is usual to spread, every six inches high, a layer of mortar near the head. Care must be taken that no fresh earth be received into the mould till the first layer is well beaten. When, by thus laying on repeated layers, the mould is full, it may be taken to pieces, and the earth which it contained will remain firm and upright, about nine feet in length, and two feet and a half in height. The mould may then be placed for another length. By the mode of joining the different lengths, no joints are left in this work : for as the mould is open at one end, unless the length of the wall should happen to be the exact length of the mould, the end which is open is left *sloping*, so that the next quantity which is put on will press upon and unite with it. In the second length, and most of the following, the head of the mould is useless ; it is only made use of for the corners, windows, doors, &c.

When the workmen have gone round the building, they must begin upon the partition walls, where the head of the mould must of course be used to form the door-jambs.

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The first course being thus completed, we must proceed to the second ; and in each successive course, we must proceed in a direction contrary to that of the preceding. With this precaution, the joining of the several courses will incline in opposite directions, which will contribute much to the firmness of the work. There is no reason to fear overcharging the first course with the second though just laid : for three courses may be laid, without danger, in one day. The grooves for receiving the joists, in all the courses after the first, must be cut out of the earth, care being taken that they shall not be immediately over the former grooves, but in the middle point between them. Care must also be taken, that the head of the mould, and wall-gauge, be diminished, as in the first course, in order that the same inclination of the sides to each other may be preserved.

The second course is not to be continued without interruption, as it is necessary that the partition wall should join, or bind into the exterior wall, or rather that all walls in the building, whether outside, or partition walls, which meet at an angle, should cross each other at every course.

This description of the two first courses, is equally applicable to all the rest, and will probably enable any person to build the walls of a house with no other material than earth, of any moderate height and extent which he pleases.

It has been observed, that each course will be two feet and a half high, if the mould be two feet nine inches : for the mould must include three inches of the course beneath. The grooves must, therefore, be made six inches deep, though the joists are only three inches in thickness.

The openings for the doors and windows, must be left at the time of building the walls. This may be done by placing within the mould, either two, or one of the heads wherever the wall is to terminate, and the opening commence.

It is necessary, however, in order to

make this kind of building complete, to lay in occasionally, binders, or bonds. After the first course is laid, and the mould fixed for the next, lay in at the bottom of it, a board rough from the saw, about five or six feet long, eight or nine inches broad, and about an inch thick. There will be some inches of earth on each side of it in the wall, which will wholly conceal it, and also prevent it from rotting. In the next course, or in the middle of the mould, there may be short ends of boards laid across, so that they shall not come through, but be concealed in the wall. These may be at two or three feet intervals, and crossing each other at the angles. This will serve to equalize the pressure. When the wall is completed to the height of a story, boards of three or four feet in length should be placed on the pisé, in those places where the beams and joists are to be fixed, which may be laid on immediately after the mould is removed.

Besides the advantages of strength and cheapness, this method of building possesses that of speed. In a single day three courses may be laid one over the other, so that a wall of eight or nine feet, or one story high, may be built in one day. Experience has proved, that as soon as the walls are raised to a proper height for the floorings, the heaviest beams and rafters may, without danger, be placed on them ; and that the thickest timber of a roof may be laid on the gables, the instant they are completed.

Relative to the earth proper for this kind of building, it may be necessary to say, that all earths in general are fit for it, when they have not the lightness of poor lands, nor the stiffness of clay ; all earths fit for vegetation, brick earths, and strong earths, with a mixture of sand and gravel, and which for this reason cannot serve for making bricks, tiles, or pottery, make the best pisé. If the earth to be obtained, is not quite fit, it may be mixed to make it so. Strong earths must be tempered with light ; those in which clay predominates with others composed more of chalk,

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and sand; and those of a rich substance, with others of a poorer nature. It will not be amiss to mix with the earth some small pebbles, gravel, rubbish, or mortar, or any small mineral substances; but none of the animal, or vegetable kind must be admitted. It is scarcely necessary to add, that the earth to be employed, must contain sufficient moisture in it, so that when it is well rammed, it may make one solid adhesive mass. An indication of the earth being proper for building in pisé, is when a pick-axe, spade, or plough, brings up large lumps of it at a time; when arable lands lie in clods, or clumps, or when field-mice have made subterraneous passages in the earth. The operation relative to the earth is very simple. When it is dug up, the clods are to be broken with a shovel; the large lumps are to be drawn away by a rake, in which there may be intervals of an inch and a quarter between the teeth, that the stones and pebbles of the size of a walnut may remain.

Such is the method of building, which has been practised by the Lyoneses for many centuries. Houses thus built, are strong, healthy, and very cheap. The rich traders of Lyons have no other way of building their country-houses. An outside covering of painting in fresco, which is attended with very little expense, conceals the nature of the building, and is a handsome ornament to the house. But as this kind of painting is not well understood in England, we recommend the outside to be plastered, or rough cast. The interior may be plastered the same as other buildings.

The plastering, and rough casting, or dashing, should not be done for five or six months after the walls are built and covered in; and they should always be built between the months of March and October inclusively. To prepare the walls for plastering, indent them closely with the point of a hammer, or hatchet.

We have only one or two more remarks to make; as building in Pisé, is not very likely to be adopted by the

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opulent, except on some particular occasions, it is of importance that every facility should be given to those persons, who, from motives of economy, might be inclined to build their dwellings in this manner. We see no reason, therefore, why a mould three or four feet long, will not answer every purpose of that of nine or ten feet long above described; and if instead of its being two feet and a half deep, it were only two feet, or even eighteen inches, it might, we think, be equally useful; the smallness of its size would render it much more portable, and the dimensions of the wood, except the thickness of the boards, might, perhaps, be lessened without any disadvantage to its utility.

BULB, *bulbus*, in botany a hybernacle, or winter receptacle of some plants; it is a kind of large bud, generally to be found under the earth, but sometimes appearing above it; it arises immediately from the roots; and was itself considered a root, till Linnæus corrected the error, and shewed that it was a single bud enveloping the whole plant. A bulb is either scaly or *squamous*, as in the lily; *solid*, as in the tulip; coated, or *tunicated*, as in the onion; *jointed* as in the tuberous moschatel; *duplicate* when the bulb is divided into two parts, as in the crocus; and *aggregate* when there is a congeries of such bulbs to one plant. Plants having bulbs, are consequently denominated bulbous. Some plants bear bulbs on their stalks instead of seeds, as garlic. The stem, in this case, is called bulbiferous, or bulb-bearing. Roots which are solid, and roundish like true bulbs, are also called bulbous; as the turnip, *rannunculus bulbosus*, &c.

Every bulb contains in miniature, a plant in all respects, so that many plants may be propagated with equal facility by the bulbs, or buds, as well as by the seed.

One of the most striking phenomena in vegetation, is that of raising plants from their bulbs without earth. Some of the finest hyacinths exhibited in the windows of London, are reared in this

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way. Indeed, *DUHAMEL* raised small oak trees merely by water, in which he kept them eight years.

Bulimia. See *HUNGER INSATIABLE*.

BULL, *Taurus*, the male of that important breed of animals of the genus *Bos*. *Ox*.

The bull is generally a fierce and terrible animal, but his fierceness may be much allayed by a proper mode of breeding. When chased, he has a majestic and sullen air, often tearing up the ground with his feet and horns. A bull, like a stallion, ought to be the most handsome of his species. He should be tall, and well made; his eyes large, protuberant, black, and rolling; his forehead broad, and close set, with short curled hair; his ears long, hairy within and without; his horns longish, clean, and bright. The head should also have every mark of strength, and be proportionably aided by the neck. The dewlap should be thin and supple, and the skin tight and smooth. The breast should be large, the shoulders deep, thick, broad, and high, the back straight and broad; the ribs broad and circular, the belly deep, straight, and tapering a little to the hind thighs, which should be large and square. The roof ought to be wide, particularly over the chine and hooks, and the tail, if the bull be the true English breed, should not extend far up the roof; and be strong and deep, with much lank hair upon the under part of it; the hind part of the buttock should be rather square than exuberant, from which mark, there is an absolute certainty, that he does not partake of the buffalo, or muscular-thighed breed, which are the worst feeders. The joints and legs should be short and strong, and the body long, deep, and round, filling well up to the shoulder, and into the groin.

The vigour of the bull will last several years, if not made too free with while he is young, but he is usually in his most perfect state from two or three years old, to five or six. These animals should be kept in well-inclosed places, and have the cows brought to them.

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The practice of working them is not in general to be advised, as they are apt to become by that means too dull and heavy for leaping. They should always be kept well in this intention. In rearing young bulls, they should be constantly supplied with food in a plentiful manner, from the period of their being calved till they are full grown.

By well known artificial means, the nature of this animal is remarkably softened, and most of his impetuosity destroyed. See *BREEDING OF CATTLE*, and *Ox*.

BULL-BAITING, a barbarous and inhuman sport, now, to the honour of public feeling, on the decline. Persons who delight in the spectacle of a bull tied to a stake, and set upon by dogs, are more deserving of the name of brute, than the animal in whose pains and agonies they rejoice. Too much abhorrence can scarcely be expressed at such inhuman practice.

BULLFINCH, is a species of the genus termed *Loria pyrrhula*; it is a bird so well known as to require but little description. The head, wings, and tail are black; the breast and belly red; the upper tail, coverts, and vent, white. The male is distinguished from the female by the superior blackness of its crown, and by the rich crimson which adorns its cheeks, breast, belly, and throat; those parts of the female being of a dirty buff colour. The plumage of this species is variable, some individuals being wholly black; others white with black spots on the back, or with the head, neck, breast and belly rosy.

It is so docile a bird that, in its natural state, having but two or three harsh notes, it becomes, by a regular education, proficient in music. It may be taught to speak as well as to sing.

This bird is, perhaps unjustly, stigmatized as a destroyer of the young buds of fruit-trees, although its object most probably is not the bud itself, but the worm in it.

BULL-HEAD, or *Cottus*, a genus of fishes consisting of ten species, chiefly inhabitants of the European and Indian seas. Distinguished by the head.

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being broader than the body. The following are the chief:

The *cataphractus*, or armed bull-head: body octangular, mailed; six inches long; inhabits the European coast, and feeds on small crabs and other aquatic meats.

The *quadricornis*, or four-horned bull-head, with four bony protuberances in the middle of the head. Inhabits the Baltic and Greenland seas; a bold voracious fish.

The *gobio*, river bull-head, or miller's thumb. Inhabits the clear brooks of Europe. Grows to seven inches long. Flesh good and wholesome; becomes of a red hue on boiling.

The *scorpius*, or father lasher. Head armed with numerous large spines. Inhabits deep places near the shores of Europe, Newfoundland, and Greenland; is very fierce and swift; seldom with us exceeds nine or ten inches in length. It follows sharks, and other large predacious fishes, lashing them with its spines, which it is able to distend in a very formidable manner till they are forced to abandon their haunts. Its flesh is eaten by the Greenlanders.

BULLRUSH, Club-grass, or *Scirpus lacustris*, is an indigenous plant frequently found in rivers, pools, and fens. It attains a height of from five to twelve feet, and is, near the root, about the thickness of a finger. Its spikes are dark chesnut or dark brown, with a tinge of red.

When fodder is exhausted, cattle will live upon this plant, and for that purpose it may be made into hay. Bottoms of chairs and mats are commonly made with it. A kind of paper may be prepared from the pith, by pressing it, and afterwards adding size to it.

BURDEN. See **BURTHEN**.

BURDOCK, Clot-bur, or *Arctium Lappa*, called also *Bardana*, an indigenous biennial plant, common on road sides and in waste places, flowering in July and August. It is so well known as scarcely to require description. The calyx of the flower is globular with imbricated scales, having abundance of

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little hooked extremities, by which it adheres to the hair, clothes, and also to the fur of animals.

The seeds and roots of this plant are mildly diuretic and diaphoretic, and are said to be employed with advantage in scurvy, gouty affections, lues venerea, phthisis and nephritic complaints. A pint of a decoction, made by boiling two ounces of the dried root in three pints of water to two, may be taken in divided doses every day. The expressed juice of the leaves has been sometimes given, to the quantity of four ounces or more with the same intentions. The dose of the seeds is a drachm, care being taken to separate them from the prickly matter with which they are surrounded.

BURGOO, or **BURGOUT**, a seafaring dish made of oatmeal, or whole groats boiled till they burst, then mixed with butter. It is a cheap and wholesome diet. Burgoo, sometimes called also loblolly, is held by Cockburn very proper to correct that disposition to costiveness to which the other diet of sailors much inclines them.

BURGUNDY PITCH, *Pir Burgundica*, is the juice of the *Pinus abies* of Linnæus, which is obtained by making incisions through the bark so as to lay bare the wood. It concretes in the form of flakes, which, after being detached, are put into large boilers with a sufficient quantity of water, melted, and then strained through coarse cloths under a press. It is brought to this country from the neighbourhood of Neufchatel, packed in casks. A factitious sort is made in England, but it is in every respect inferior to the genuine sort, being very much like yellow rosin. True Burgundy pitch may be known by its comparative want of friability, its viscosity, its unctuousity, and an oozing out of water from it upon pressure. Its colour is of a reddish brown; it has besides a somewhat soft consistence, which no adulteration in England has ever imitated with effect. Very little true Burgundy pitch is, however, to be found in the shops.

True burgundy pitch is a useful ex-

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ternal medicine, being spread upon leather as a plaster. It excites some degree of inflammation, and a serous exudation from the part over which it is applied, without raising the skin generally into a blister. With this intention a plaster is sometimes applied to the nape of the neck and other parts. It is used principally in cases of catarrh, hopping-cough, and some kinds of shortness of breathing.

BURIAL, the interment of a deceased person. The rites of burial have been at all times, and in every civilized country, considered sacred; and, where no unnecessary parade and expense are wasted in them, they are assuredly praise-worthy.

Interment in cities was not permitted during the three first centuries of the Christian æra, nor in churches for many ages after. Hereditary burying places were forbidden till the twelfth century. That burying in churches is highly improper, on account of the exhalations arising from the putrid bodies, must be evident to the meanest capacity. We should hope that the good sense of the community, and especially the most respectable part of it, on whom this mode of burial more immediately depends, will not suffer their feelings so far to invade their reason, as to prompt them to a continuance of a custom so injurious to the health of the living, and to the dead of no possible use whatever.

We are happy to observe that the legislature has recognised this injurious practice in the late Act for building new churches, 58 Geo. 3. cap. 45, by enacting that no opening shall be made in any church or chapel for the purposes of burial; nor grave made in any church-yard at a less distance than twenty feet from the walls of the church.

BURIAL, PREMATURE. No person should be buried till it is ascertained that he is actually dead. The commencement of putrefaction is one of the strongest signs of death. Its first stage may be distinguished by the oily nature of the humours which exude through the pores, and form a perceptible clamminess on the surface of the body. The

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exhaling vapour is accompanied with a faintish or slightly cadaverous odour; and it becomes afterwards sensibly alkaliescent, with a strongly putrid and offensive smell, which may alone prove noxious to the attendants. The body too is frequently of a greenish yellow, and sometimes swells considerably; a frothy matter is also often ejected from the mouth. A general rigidity and coldness of the body is also a strong symptom, although not always conclusive as to actual death. See **DEATH**.

BURNET, *Sanguisorba*, or *Poterium*, a genus of plants containing five species, natives of Europe, Barbary, and Canada. The following are cultivated:

The *Sanguisorba officinalis*, or Great wild meadow-burnet, a native of our own country, and growing in moist places, especially on a marly and calcareous soil in the north of England. It is a hard woody plant, and grows two or three feet high, branching towards the top, and terminated by thick oval spikes of flowers of a greyish-brown colour, which appear in June and July. It is relished by cattle, especially by sheep; and has been occasionally used by the dyers, for obtaining a grey, lilac, and black colour; it has also been sometimes used in tanning.

The *Poterium sanguisorba*, or Lesser upland, or Common garden burnet, is found wild on our own dry mountains, and is used as a salad herb, for winter and spring, from the aromatic warmth of its leaves. The root and leaves are perennial; the stalk annual. The leaves are used in cool tankard, and for imparting an agreeable flavour to wine.

With respect to the more or less profitable culture of this plant, the opinions of practical farmers are divided. It, however, deserves to be noticed, that burnet increases the quantity of milk in cows, and produces good butter. The mutton fed on it is said to be of a superior quality; and it is even asserted that it cures the rot in sheep, and recovers such as have scoured.

The *hybridum*, or Sweet burnet. A biennial plant, indigenous to the south of France, Italy, and Barbary.

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The *spinosum*, or Prickly, shrubby burnet, armed with sharp spines; rises three feet high; a native of the Levant.

The three first should be raised by seeds, or parting of the roots; the last succeeds best by cuttings.

BURNET-SAXIFRAGE, or *Pimpinella*, a genus of plants, containing nine species, inhabitants of the south of Europe, Egypt, and the Cape. Three of which are common to the mountains and dry soils, or hedges, of our own country. The following are chiefly deserving of notice.

The *magna*, Greater burnet-saxifrage, with pinnate leaves, all the leaflets being ovate, the terminal one three-lobed. There are two other varieties, all found in our hedges.

The *saxifraga*, or Common burnet-saxifrage, grows on a dry, calcareous, or gravelly soil, and blossoms in July and August. Every part of this plant has a fragrant smell and taste. The root is said to be efficacious in scorbutic and cutaneous disorders; and also in dropsical and asthmatic complaints. The young leaves and shoots are very palatable, and eaten as salad. They are occasionally used to give a flavour to malt-liquors, and, it is said, tend to correct tart and spoiled wines.

The *dioica*, or Dwarf burnet-saxifrage, is a rare plant in this country; flowering in May and June. It is found only on hills, particularly on St. Vincent's rocks, near Bristol, and at Uphill in Somersetshire. Its properties are similar to the former.

The *anison*, or Anise; for an account of which see **ANISE**.

BURNING, the action of fire on bodies, by which some of their constituent particles are separated from each other, assume the nature of fire themselves, and either fly off in light particles, are dissipated in the form of vapour, or become ashes.

Burning is also applied to the action of divers things which are cold to the touch; in this sense, aqua-fortis is said to burn cloth. In this sense, also, very cold bodies may be said to burn, producing on the living animal fibres,

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the same sensation and effects, as when excessive heat is applied to them. See **HEAT** and **COLD**.

Burning, in surgery, denotes the application of the actual cautery, or a red-hot instrument, to the part affected.

Burning of land, or *burn-baiting*, a practice long employed in agriculture. It is performed by cutting off the turf of the ground, piling it in heaps to dry, and afterwards burning it to ashes, which are spread over the bare surface and ploughed in. See **HUSBANDRY**.

Bastard burn-baiting, consists in burning the refuse product of the land, such as stubble, harley, &c. upon the ground which produced them; or whatever else is laid on it for that purpose.

BURNING-GLASS, or **BURNING-MIRROR**, a machine by which the sun's rays are collected into a focus or point; and by such means their force and effect are extremely heightened, so as to burn many objects, and melt others of difficult fusion, placed in it.

Burning-glasses are of two kinds, convex and concave. The convex ones are lenses, which acting according to the laws of refraction, incline the rays of light towards the axis, and unite them in a point or focus. The concave ones are mirrors, or reflectors, whether made of polished metal, or silvered glass, and which, acting by the laws of reflection, throw the rays back to a point, or focus, before the glass.

The use of burning-glasses is very ancient, Archimedes, it is said, set fire to Marcellus's navy, by means of a burning-glass, composed of small square mirrors, moving every way on hinges, which when placed in the sun's rays, directed them upon the Roman fleet, so as to reduce it to ashes at the distance of a bowshot.

In modern times, there have been several inventions of this kind, remarkable for their large diameter, and powerful effects. Buffon made one, which consisted of 400 mirrors, which reflected all their rays to one point, and with this he could melt lead at the distance of 140 feet.

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Sir Isaac Newton presented a burning-glass to the Royal Society, which consisted of seven concave glasses, so placed, that all their foci joined in one physical point. This instrument vitrifies brick or tile, in one second, and melts gold in half a minute.

Mr. Parker, of London, was induced, at a great expense, to complete a large transparent lens of flint glass, three feet in diameter, which, when fixed in its frame, exposes a surface of 32 inches diameter in the clear; the distance of the focus is six feet eight inches, and its diameter one inch. The rays from this large lens, are received and transmitted through a smaller one of 13 inches in diameter in the lens without a frame, its focal length 29 inches, and the diameter of its focus $\frac{3}{8}$ ths of an inch: so that this second lens increases the power of the former more than seven times.

Notwithstanding the power of these instruments, their expense and nature prevent their being used, except by those persons who have large fortunes at command; and, as they can only be used when the sun shines, the heat obtained by the galvanic apparatus, has, in numerous instances, superseded them. See GALVANISM.

Great care ought to be taken not to have looking-glasses, glass-bottles containing water, and other bodies having the power of reflecting and concentrating the rays of the sun, in such a situation as to do so. For want of this precaution, many destructive fires have taken place.

BURNS, may proceed from fire, as well as a fluid body; which latter may be heated, or consist of corrosive mineral acid, such as aqua-fortis, sulphuric acid, (oil of vitriol) &c. In this place, we shall treat only of burns occasioned by fire, and by the accidental application of acids to the surface of the body. For an account of other accidents of this nature, see SCALDS.

The immediate consequence of burns, is a greater or less degree of inflammation; and the danger attending such accidents, is in proportion to the extent of the injury. Burns which irri-

tate the skin only, without destroying the cuticle, act nearly in the way of a common blistering plaster. When the cuticle is destroyed, no blistering takes place; a mortified slough is observed, and when this separates, an ulcer is left.

In *superficial and slightly extended burns*, the first thing to be done, is to plunge the part into very cold water, containing the extract of lead, and quicklime, in the proportion of one drachm of lime, and two tea-spoonfuls of the extract, to a pint of water. This fluid should be changed from time to time, whenever it becomes hot; and the burnt part ought to remain in it for several successive hours. When by these means, the pain is considerably calmed, remove the injured part from the local bath, and wrap it in compresses steeped in the same liquid, with which they should be moistened from time to time. If extract of lead be not at hand, lime-water, simple cold water, or still better, ice may be employed. If from the situation of the part, it cannot be immersed in the bath, it should be frequently wetted, by the aid of a sponge, with the fluid. Experience has proved the efficacy of this remedy; and it has also further proved that it may be used with the greatest success, a quarter, or half an hour after the accident, and even when blisters have already risen.

When the irritation and pain are diminished, the blister may be opened; but this must not be till the lapse of some days. Each blister should be pricked with a needle, in two places at its inferior part, and the serous matter allowed to flow out, but the scarf skin should not be removed. All the parts deprived of the scarf-skin, ought to be dressed with a rag smeared with wax, or calamine cerate, and then covered with compresses soaked in goulard-water. The water may be replaced by goulard cerate, provided the sensibility of the part is much diminished; in the contrary case, it may be hurtful, because the pain would be increased thereby.

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When the pain is so intense as to render the bare pressure of the dressing insupportable, mix an equal part of lime-water and linseed, or olive-oil, and by the aid of a pencil, lightly smear over the burnt part with this liniment; the wound must be dressed twice a day. It is necessary to make several little holes in the linen which immediately covers the wound, so as to allow the matter to ooze out.

If, notwithstanding the adoption of these means, the inflammation should increase, a poultice must be applied. This should be made of a decoction of marsh-mallow roots, and two or three poppy-heads; linseed meal, or the crumb of bread being added, to give it the proper consistence.

When the burn is superficial, and *extended over a large surface of the body*, the pains being intense, the inflammation considerable, and the fever very violent, there is much danger, and death may be the consequence. Under such circumstances, bleeding must be performed once or twice; all food must be prohibited, except a little thin broth, linseed, or marsh-mallow infusion, or sugar and water. A dessert-spoonful of an anti-spasmodic mixture, composed of thirty drops of æther, twenty drops of laudanum, and four ounces of mint-water, or any other fluid, should be taken every fifteen minutes.

Independently of these internal remedies, the burnt part must be dressed with cerate mixed with goulard extract, if the pressure can be supported; however, if the pain be very violent, emollients, such as linseed, or marsh-mallow infusion, must be used.

When the burn has been occasioned by gun powder, all the grains must be carefully removed.

When the injury has penetrated very deep, and the part is very black, edged with a circle more or less red, apply the poultice of marsh-mallows, &c. mentioned above; and afterwards the wax cerate.

The ulcer which arises from the separation of the gangrenous parts, must be treated as a simple wound; dressing

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it once or twice a day, with dry lint, and abandoning all the unctuous matters. It is only when cicatrization is nearly effected, that the edges should be dressed with cerate: by this means, we prevent the adhesion of the lint, and consequent irritation of the wound, which would prevent its healing.

In addition to these remedies, vinegar has been, sometimes, found an effectual application, whether the skin be sound or blistered. The part may be entirely immersed in it, or linen rags dipt in the vinegar, may be applied, and the parts kept constantly moist, till the pain be removed. The same application is useful when the skin is rubbed off, or otherwise destroyed; and although the vinegar may, on its first application, give additional pain, it soon ceases, and the part becomes much cooler and easier.

When burns are from the first attended with loss of substance, as commonly happens after the application of hot metallic bodies, recourse must be had to vinegar, as already mentioned, or to the liniment composed of linseed-oil and lime-water. Goulard cerate has, however, in some cases given more immediate relief: a weak solution of sugar of lead has sometimes, also, been of service.

Burnt-clay. See CLAY.

Burnt-sponge. See SPONGE.

Burnt-hartshorn. See HARTSHORN.

BURTHENS, or heavy loads, are invariably, more or less, injurious to the persons who carry them. They are not only mischievous to the respiratory organs and the lungs, but by the tension to which the general muscles of the frame are put in the efforts necessary to support them, the foundation is often laid of many incurable maladies: the rupture of a blood-vessel in such undue exertions of strength is a very common consequence. Whether it be cupidity in the master, or imprudence in the servant, the practice is equally to be deprecated.

BUR-WEED, the greater, or *Bur-reed*, *Sparganium erectum*, an indigenious perennial plant, growing in ditches,

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marshes, and on the banks of rivers ; flowering in July. This plant is eagerly eaten by cattle whilst in a green state, but refused by sheep and horses. Its flowers have been successfully employed in tanning.

BURYING-GROUNDS are places consecrated to the interment of the dead ; and have, from the earliest institutions of society, been held in veneration both by heathens and christians.

There can be no question of the pernicious and unwholesome tendency of burying-grounds in the vicinity of dwelling-houses, especially in large and populous cities : it is to be hoped that the good sense and enlightened understanding of mankind will cease to continue a practice from which no possible good can result. The recent disputes which have taken place relative to burying in *iron* coffins at St. Andrews Church, Holborn, in the city of London, will, we should hope, shew the necessity of burying grounds being without the city ; and the necessity also of separating a temple of religion from the putrid and noxious exhalations arising from the decomposition of animal bodies.

Bush Vetch. See **VETCH**.

BUSHEL, a measure of capacity for dry goods, as grain, fruits, dry pulse, &c., containing four pecks, or eight gallons, or one-eighth of a quarter.

A bushel, by 12 of Henry viii. c. 5, is to contain eight gallons of wheat ; the gallon eight pounds of troy weight ; the ounce twenty sterlings ; and the sterling thirty-two grains, or corns of wheat, growing in the midst of the ears. This standard bushel is kept in the exchequer, and is found to contain 2145,6 cubic inches ; of water, by weight, 1131 ounces, 14 penny-weights troy. The first malt act, however, altered these proportions, declaring that the legal *Winchester bushel* should be 18½ inches diameter, and 8 inches deep. A vessel thus made will contain 2150,42 cubic inches ; of course the corn gallon contains 268,8 cubic inches. Besides the standard or legal bushel, there

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are several local bushels of different dimensions, in different places. But by 31 Geo. iii. c. 30, the bushel by which all corn is to be measured and computed is the Winchester bushel ; a quarter to consist of eight such bushels. Justices of counties, and mayors of cities, are to provide a standard bushel ; and all measuring (of corn) shall be computed by the stricken, and not by the heaped bushel. If corn be sold by weight, a bushel of wheat must weigh 57lbs. avoirdupoise ; of rye 55lbs. ; of barley 49lbs. ; of bear or big 42lbs. ; of oats 38lbs. ; of wheat-meal 56lbs. ; of wheat-flour 45lbs. ; of rye-meal 53 lbs. ; of barley-meal 48lbs. ; of bear or big-meal 41lbs. ; of oat-meal 22lbs.

The coal bushel to be used by all dealers in coals by the chaldron or lesser quantity, in London and Westminster, or within ten miles thereof, is to be round with an even bottom, and to be nineteen inches and a half in diameter, from outside to outside ; and to contain one Winchester bushel and one quart of water : it therefore contains 2217,62 cubic inches ; and as it is also to be heaped up in the form of a cone, six inches above the brim, the outside of the bushel being the extremity of the base of such cone, it altogether will be found to contain 2814,9 cubic inches. It must be sealed or stamped at the Guildhall of London, or the Exchequer Office Westminster.

Besides the standards of legal bushels above mentioned, there are several local bushels of different dimensions, in different places, which are productive of much confusion and inconvenience. We cannot enumerate them all ; but at Abingdon and Andover a bushel contains 9 gallons ; at Penrith a bushel of wheat, and some other grain, contains 16 gallons ; of barley, and some other, 20 gallons ; at Kingston upon Thames the bushel contains 8½ ; at Newbury 9 ; at Wycomb and Reading 8½ ; and at Stamford 16 gallons, &c. &c. !! A proof of the necessity of some general law being enacted relative to measures.

BUSTARD, or *Otis*, a genus of

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birds containing eleven species, natives of Europe, Asia, and Africa. The two following are the chief.

The *tarda*, or Great bustard, is found frequently in Great Britain; and inhabits also the open plains of Europe, Asia, and Africa. Its colour is wave-spotted with black, and rufous; beneath white. It is said to be the largest of the British land fowl; it being four feet long, and often weighs twenty-five pounds. The male has a long pouch, beginning under the tongue and reaching to the breast, capable of holding nearly seven quarts of water, supposed for the purpose of supplying the hen whilst sitting on the young, before they can fly, with that fluid. It feeds on grains and herbs, is solitary and shy, except about the time of migration; it flies heavily, but runs swiftly; is quick of sight and hearing; lays two pale olive-brown eggs with darker spots, in a hole scraped in the ground. They are incapable of perching on trees for want of the back toe. The female is smaller than the male, and marked with different shades of colour. In autumn they are gregarious, and, although of great strength, they are so timid that they fly away on the slightest appearance of danger.

The *celicnemus*, or Thick-kneed bustard, is grey; two first quill feathers black, white in the middle. Inhabits Europe, Asia, and Africa. Feeds in the night, on caterpillars, worms, and other reptiles. Breed in holes, or among stones on the bare ground; eggs copper-coloured, spotted with darker red; makes a piercing shrill cry and emigrates.

There were formerly great flocks of bustards in this country, upon the wastes and woods; they were hunted with greyhounds, and very easily taken. Bustards have been latterly recommended to be bred as domestic fowls. Their food in a wild state is not exactly known; but it is supposed that they will eat the same as the turkey. To those who desire variety and novelty, the bustard is peculiarly an object for propagation and increase: the flesh is delicious; and it

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is probable that good feeding and domestication might stimulate them to lay more eggs.

BUTCHER, a person who slaughters cattle for the use of the table; and cuts up and retails meat.

Various laws have been enacted to correct abuses in the practice of this trade, such as for selling swine's flesh mealed, or dead of the murrain, and also for those who exact unreasonable prices for their meat; but we believe they are rarely, if ever, enforced. Butchers have been, however, occasionally fined for forestalling, &c.; but the more blameable offence of blowing up their meat with expired air from the lungs, the public seem disposed to pass over. This practice so common, as well as another said to be occasionally adopted by butchers, that of filling the cellular membranes of animals with blood, cannot be too much deprecated; and, if the good sense and understanding of the purchasers of animal food were properly exerted, such practices must soon cease to exist, without any express law being passed for the purpose of preventing them.

BUTCHER'S BROOM, *Knee Holly*, or *Ruscus*, a genus of plants containing five species, as follow:

The *aculeatus*, Prickly butcher's-broom. The stem suffruticose, tough, stiff, from eighteen inches to three feet high; the leaves have pungent points; the flowers are small and naked, yellowish green, or purplish. The female flowers succeeded by berries, red, larger than those of asparagus, and almost as large as some cherries, of a sweetish taste, with two large orange-coloured seeds in each. The seeds of this plant generally lie a year in the ground before they vegetate; and the plants so raised are long before they make any figure; hence it is much better to transplant the roots. It abounds in the groves of England.

The *hypophyllum*, Broad-leaved butcher's-broom. The leaves are broader than the last, bearing flowers underneath, naked. It is a native of Italy.

The *hypoglossum*, Double-leaved butcher's-broom. The flowers are of a

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pale yellow; the berries like those of the first sort. This is also a native of Italy.

The *racemous*, Alexandrian laurel, with stalks slender, about four feet high, sending out side branches; flowers of an herbaceous yellow colour; berries like the first. A native of Portugal.

The *androgynus*, Climbing butcher's-broom, with pliant stalks, seven or eight feet high; the leaves bearing flowers at the edge; the flowers are white; the berries yellowish red. A native of the Canaries.

All these are cultivated in our gardens, and appear ornamental on the verges of shrubberies, as being evergreens. They are easily propagated by seeds or suckers. The last is the tenderest of the tribe, and will rarely flourish without the aid of a green-house.

BUTTER, a fatty, concrete, soft substance, of a colour more or less yellow, and of a mild, agreeable taste. It is obtained from the milk of different animals, by suffering it to stand at rest for some time, when a thick substance rises to the surface, which is denominated *cream*. This is skimmed off, and the thinner parts of the milk still adhering to it, are separated from it by the process called *churning*. Butter may be considered as an animal oil, containing a small portion of curd and whey. It liquefies at about 98°; by this process the impurities are separated, and it remains a longer time without becoming rancid.

Butter obtained from the milk of different animals varies in its consistence. That from the cow and goat yields solid butter; from the milk of the sheep it is soft. The butters from the milk of the ass, the mare, and the human female, are nearly in the state of cream, especially the last. The butter commonly used in England is made from cow's milk.

Butter, as an article of food, has been placed by many physicians and physiologists in a very low scale; indeed, some have gone so far as to affirm, that it is used principally on account of its agree-

able taste. But we do not think that the common sense of mankind can be so far set at naught. It would be very extraordinary and unaccountable indeed, if butter were not nutritious, that it should be so large an ingredient in all animal milk: that fluid which is designed, and so admirably adapted for the support of the young of all mammiferous animals! We do not hesitate therefore to assert, that good butter is the most wholesome and nutritious of all animal fats. Having stated this, we are, notwithstanding, advocates for its moderate use, even by persons in good health. In many diseases, particularly those in which the stomach is more immediately concerned, this fat, as well as others, is often very injurious.

Butter is, however, very liable to undergo, in a short time, particularly in hot weather, a considerable change in its qualities; and it is also well known that stale and rancid butter is offensive, and consequently injurious to most stomachs.

The nature of butter is also very soon altered by the application of heat at any season of the year; and, therefore, toast and butter is frequently an improper food, especially if, after it is made, it be kept hot before the fire. The bread being baked, suffered to cool, and the butter being laid on it cold afterward, is a much better method of eating it. The common custom too of melting butter, with an addition of flour and water, is also bad; but here the principal cause of the mischief lies in the addition of the flour, which will begin to ferment the moment it is taken into the stomach; hence the improper and indigestible nature of this, and many other made gravies in the cook's vocabulary: were the *flour* left out of such condiments and sauces, most probably the mischief arising from them would not occur.

Upon the whole, therefore, we consider butter, taken in moderation, a useful article of diet; and should no more be inclined to prohibit its general use because it may, most undoubtedly, be

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used improperly, than we should to prohibit the use of water for the quenching of thirst, because persons are sometimes unfortunately drowned by it.

From what has been said, the qualities of salt-butter may without difficulty be appreciated; we do not conceive that the simple addition of common salt to butter can render it less wholesome than when eaten fresh, if the salt should not be in sufficient quantity to produce thirst; but as it is difficult to keep butter from the contact of air when salted, so we know that the exterior parts of every cask or pot of salted butter becomes more or less rancid,—and such rancidity is often communicated to the whole mass; of course such butter is unwholesome. One of the principal causes of the unwholesomeness of salt-butter, we believe to be that it is not, in general, salted whilst it is newly made and fresh: for if it begin to spoil before it is salted, we fear that no after-process in domestic economy will remedy the mischief.

BUTTER, THE METHOD OF MAKING. The first thing necessary and preparatory to the making of butter, is to provide suitable vessels for the reception of the milk from the cow. Various kinds of vessels have been used for this purpose, such as wood, stoneware, slate, earthen-ware glazed with lead, lead, and brass; but many of these, particularly those of brass, and also those glazed with lead, and made of lead itself, are positively dangerous; and none of them can be compared to those lately invented which are made of *cast-iron*. These are softened by annealing in charcoal, turned smooth inside, and then covered with a coat of tin to prevent the iron from coming in contact with the milk, the rust of which might injure it. To prevent rust also, the outside of the dish is painted over. They are easily kept clean: and, preserving a proper degree of coolness, the milk throws up more cream than in wooden dishes: nor are they expensive.

After the milk is brought from the cows it should be passed through a sieve or strainer; (some persons, however, use

cloth strainers) of hair or silver wire, fixed in the bottom of a large wooden bowl into the vessels which are destined for its reception; the most suitable for the purpose of its creaming well, and in the most expeditious manner, are those which are shallow, so that it may not stand deeper than three or four inches at the most; by which means a larger proportion of cream is not only produced, but in consequence of the expeditious cooling of the milk, the tendency to acidity in warm seasons is considerably checked.

From trials which have been made, it appears that the separation of the cream from the milk proceeds with the greatest regularity, and in the most favourable manner, when the heat is from 50 to 55 of Fahrenheit's thermometer. This temperature therefore ought to be aimed at; although some latitude in this respect may be allowable. From the best observations, however, it appears that when the heat exceeds 60 degrees, the operation becomes difficult and dangerous; and when it falls below the 40th degree, it can scarcely be carried on with any degree of economy or propriety. A thermometer ought therefore to be hung up constantly in the milk-house, in order that the due degree of heat necessary in this operation may be known.

In a moderately warm temperature of the air, if very fine butter be intended, the milk should not be allowed to stand more than six or eight hours; for ordinary good butter it may safely be let stand twelve hours or more; but when the dairy is so large as to afford a sufficient quantity of cream, and when the very best butter is intended, the milk being to be converted into some other use while yet sweet, it may be separated after standing only two, three, or four hours.

In the general management of dairies the milk is never skimmed more than once; but in Essex and some other counties it is common to skim it three or four times, or till no more cream arises. The cream is most commonly taken off with a skimming dish, made

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either of tin or wood. But lead cisterns, (of which we disapprove) are sometimes used for holding the milk; cast-iron ones tinned are much better; in this case the milk is first withdrawn from a hole in the bottom, and afterwards the cream.

When the cream has been thus separated from the milk, it ought to be immediately put into a vessel by itself, to be kept till a proper quantity be collected for being made into butter. A neat-made wooden barrel, in size proportioned to the extent of the dairy, open at one end, with a lid exactly fitted to it, is the best for this purpose. In the under part, close to the bottom, must be placed a cock, for drawing off from time to time any thin serous part of the milk which may happen to be separated from the cream: for, should it remain, it acts upon the cream in a powerful manner, and greatly diminishes the good quality of the butter. The inside of the opening of the barrel should be covered with a bit of close fine wire, or silver-gause netting, to keep back the cream while the serum is allowed to pass. The barrel should stand a little inclined forward in the top to allow the whole to run off.

It is difficult to state any particular period for the cream's being kept before churning, the management being different in different places; but about Epping in Essex, which has long been in high repute for its butter, the cream is seldom kept above three, or at farthest four days; but always till there is a certain degree of acidity in the cream, either natural or artificial, as without that, a good churning of butter cannot be ensured; some keep a little old cream for this use, others use a little rennet, and some a little lemon juice. And it was the practice in a large dairy in Suffolk, which made butter of superior quality, when it was to be sent directly to market, to churn the cream the second or third day; but when it was to be salted, to keep it a day or two longer, or till it had acquired a certain degree of acidity; and the dairy-woman asserted that, although butter made from fresh cream

was pleasanter to the taste, yet that it would not take in the salt so well, nor keep so long as that made from cream which had been longer kept.

It has been supposed that butter of the finest quality can be made only from cream which has not been kept more than one day; but this is a very great mistake. The separation of butter from cream only takes place after the cream has acquired a certain degree of acidity; so that it is only in very few cases that even tolerably good butter can be obtained from cream that is not more than one day old. If it be agitated before that acidity has begun to take place, no butter can be obtained, and the agitation must be continued till the sourness is produced; after which the butter begins to form. The judicious farmer, however, should not attempt this practice, but allow his cream to remain in the vessel till it has acquired that proper degree of acidity which will render it, with very moderate agitation, and by this process only, very fine butter.

Upon the whole, it appears that cream kept three or four days in summer will be in excellent condition for making butter: and that from three to seven days will be found in general the best time for keeping cream before churning.

In Cheshire it is frequently the practice to churn the whole of the milk without separating any part of the cream from it; after milking, it is cooled according to the heat of the weather in summer, in separate vessels, and a certain degree of acidity brought on; and warmed in the winter by being set by the fire; by this process a greater quantity of inferior butter is obtained; but we cannot commend this method.

In summer, or while the cows are at grass, no art is requisite to give butter a colour; but in the winter and spring months, the dairy people mix a little *annatto* with the cream before it is put into the churn. A practice wholly unnecessary, and which should not be countenanced by the public.

The next operation in the completion of the process of making butter is

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churning. A variety of churns are in use. Of these, the sort shaped like a barrel is much approved of, being simple, easily wrought, and capable of being made of greater or less dimensions, according to the extent of the dairy. In small dairies, however, a milk-pail, with the agitation of the human hand, is a very common churn; but we do not think this either a very good or a very cleanly method. Others recommend a churn somewhat in the shape of a cradle on a frame of wood. It is rocked regularly, not faster than the pendulum of a clock, and answers the purpose of making butter uncommonly well. This implement is used in Scotland, in Wales, and in America. An engraving of it may be seen in the appendix to Sinclair's Code of Agriculture, Plate IV.

The cream being separated as above, is to be put into the churn of the kind which is preferred, and agitated for some time in order to effect the separation of the butter. From the practice generally adopted in the best-managed dairies, of cooling the churn by filling it for some time with cold water in the summer, and of warming it with hot water when the weather is very cold in winter, and of putting also cold or hot water to the cream in the churn occasionally, according to the season of the year, it is concluded that cream possessing a *proper temperature* is among the most exact dairy farmer's essential in the making of good butter.

Some churns may of course be better adapted to the purpose than others. Such as admit a free supply of atmospheric air, and permits that which the agitation has over-heated to escape, contributing by such means to preserve the medium temperature which cream in the course of making into butter ought to possess, seem to be the best.

In this process much nicety is required; for a few hasty or irregular strokes may render the whole of the butter of scarcely any value, which, but for this circumstance, would have been of the finest quality. The owner of an extensive dairy should therefore be very at-

tentive to the management of the churn.

When the butter is properly churned it is to be taken out and put into a large wooden bowl or other convenient vessel, with some cold spring water perfectly pure; after which the dairy-maid kneads it well with her hands, or what is better, a wooden spoon with a short handle, afterwards breaking it into as minute divisions as possible, and by rolling and pressing it against the bottom and sides of the vessel, expresses and forces out any milk which it may contain. Upon this being well performed the goodness of the butter in a great measure depends. When it has been thus worked, the milky water is poured off, and an additional quantity of pure clean water put in, and the operation of kneading, breaking, and pressing is again renewed and continued till the water at last appears scarcely tinged with the milk; which is the only proper criterion to determine when the butter is sufficiently worked.

In most cases a small quantity of salt is mixed with the butter which is intended for immediate use; and when butter is *salted*, whether it be with a view to keeping, or for immediate sale, the salt should be applied as soon as the milk has been extracted or removed in the manner just described. Part of the butter is spread on the bottom of a bason previously washed and prepared for the purpose; a quantity of salt being strewed over it, an additional layer of butter is then laid on; over this another sprinkling of salt, and so on alternately, till the whole be salted to the proper degree, according to the use for which the butter is intended. When the whole is thus salted, the dairy-maid again kneads, breaks, and works it in such a manner as to mix the salt intimately with it; after which she pours cold water over the whole; and by again working the butter, washes it free from the brine and from any milky substance which by the salting and repeated kneading, pressing, &c. may have been expressed. No dairy-maid whose hand is naturally warm, should handle butter.

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The butter, if sold fresh, is now to be weighed and made into proper forms. In well-arranged dairies, after it is weighed and made up for market, it is usually placed in cold water for a short time; but it should not remain in it too long—a few hours at most.

Butter which is salted to be kept, should be packed in tight vessels, and kept entirely from the air in a cold place: *thick* wooden casks, if air-tight, are the best.

The quantity of butter produced from a given quantity of milk, depends on a variety of particulars; but, on a medium, four gallons of milk will produce sixteen ounces of butter. In Suffolk it has been found that four gallons and a half of milk, afford a quart of cream, which, when made into butter, weighs one pound and three-quarters. Mr. Abdy found the average quantity of butter made from a cow per week, to be four pounds, and the whole in nine months, one hundred and fifty-six pounds.

There are several other methods of making butter, adopted in different counties of England, but it is not consistent with our plan to notice them; we have given that which we conceive the best.

Butter very frequently acquires a taste by the cows being fed on certain food. Some meadows contain plants which invariably give a peculiar taste to butter; this cannot be avoided but by removing the cows. It is said, however, that the taste of *turnips* may be removed by boiling two ounces of salt-petre in a quart of water, and mixing a large tea-cup-full of this solution with ten or twelve quarts of new milk, immediately after it comes from the cow. The *turnip* taste is however said to arise from the *green food* on the *tops* of the plant; and that if cows are prevented from eating those, the taste of turnip is not communicated to the milk.

WHEY-BUTTER, is an inferior sort of butter, made from whey, where cheese is the principal object of the dairy. It is not necessary to describe

the method of making this butter, it being so nearly like that which we have just mentioned. We are sorry, however, to remark, that from the high prices which butter has for some years past obtained, the cupidity of dairy-farmers in many districts of England, has tempted them to mix this article too often with their best butter. This, amongst other causes of the same kind, tends to produce the bad quality of butter very often complained of.

BUTTER-MILK, is that part of the milk which is extracted from the butter, during the process of churning.

Butter-milk, as well as whey, is refreshing and cooling. It has often been recommended in hectic fevers, for abating preternatural heat, and flushing of the face.

BUTTER, PRESERVATION OF. In addition to what has been said above, we may add, that the tubs, or firkins, into which the butter is to be put, should be previously exposed to the air for two or three weeks, and often washed; or they may be seasoned with unslacked-lime; or with a large quantity of salt dissolved in water; with this they must be repeatedly scrubbed, and afterwards thrown into cold water, where they should remain three or four days, or till they are wanted; then they should be scrubbed as before, and well rinsed with cold water; but before they receive the butter, care must be taken to rub every part of the inside of the firkin with salt; then the butter may be gently pressed into the firkin: but it must be well salted when it is made up, taking care that the salt shall be equally distributed through the whole of the mass; a good handful of salt must be spread on the top of the firkin before it be headed, after which the head should be immediately put on.

The following has been strongly recommended as superior to the common method of salting butter. Take of best common salt two parts; saltpetre one part; sugar one part. Beat them up together, so that they may be completely mixed. To every pound of but

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ter add one ounce of this composition: let it be well mixed in the mass, and close it for use. Butter thus prepared will keep good for years; but it does not taste well till it has stood a fortnight or three weeks.

In order to prepare butter for a distant voyage, let it be put into a vessel of a proper shape, which should be immersed in another containing water. Let it be gradually heated, till the butter is thoroughly melted, in which state it should remain for some time, in order that the watery, and other impure parts may subside. The pure butter will appear perfectly transparent while hot; but on cooling, it becomes somewhat paler than the original butter, and acquires a firmer consistence, by which it is better enabled to resist the heat of tropical climates. When this refined butter has become somewhat firm, yet soft enough to be handled, it should be separated from the dregs, and salted and packed in the usual manner. This refined butter may also be preserved by mixing a portion of honey with it. This mixture, when spread on bread, has a very pleasant taste, and may suit some constitutions very well. But as honey is apt to ferment, in many instances, when taken into the stomach, (particularly as it should be used here in a considerable proportion,) we do not think it an advisable method: for long voyages, it may be, however, important.

BUTTER OF ANTIMONY, or **MURIATE OF ANTIMONY**, or *chloride of antimony*, by the most recent nomenclature, a preparation of antimony and the muriatic acid. It is a powerful liquid caustic, and used sometimes with success externally, in cases of bite from mad animals, for destroying warts, &c. by the surgeon; but more frequently by the farmer, in the cure of quittor, canker, fistulas, poll-evil, &c. For the treatment of persons who have swallowed butter of antimony by mistake, see **POISONS**.

Butter-burr. See **COLTS-FOOT**.

Butter-cup. See **RANUNCULUS**.

BUTTERFLY, or *Papilio*, a ge-

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nus of insects containing nearly twelve hundred species, scattered over the globe, of which nearly seventy are natives of our own country.

The variety and richness of the colours which adorn the greater part of this tribe, have made it an object of especial research by painters, as well as naturalists. The principal of this numerous genus, are the following. The *Priamus*, a native of Amboyna, and very rare; the *Hector*, a native of Asia, and very beautiful; the *Machaon*, a native of our own country, very elegant, and sometimes called the *swallow-tailed* butterfly; the *Apollo*, occasionally found in our gardens, a beautiful insect; the *Brassica*, or common large white cabbage butterfly, known to every one; the *Io*, or peacock butterfly, an elegant specimen, inhabiting Europe, and our own country; the *Iris*, found in our own gardens, and in Europe generally.

From the great fecundity and variety of this genus, they would probably soon cover the surface of the earth, did not nature provide a bar to their increase, by multiplying their enemies: hence they are destined to become the food of a great number of animals of various kinds. It has been calculated that a single pair of sparrows, may destroy in one week, three thousand three hundred and sixty butterflies for the support of themselves and their young.

Butterflies are perfectly harmless if eaten. Their larvæ, or grubs, do extensive injury to fruit-trees, and, therefore, they ought to be carefully collected and destroyed; after which the trees should be washed with a mixture of lime and tobacco-water.

BUTTER-WORT, *Yorkshire sanicle*, or *Pinguicula*, a genus of plants, containing five species; two of which are common to the bogs of our own country, the rest to Europe. Our indigenous butterworts, have pale red, purple, or deep violet flowers, hairy within. The Swedes and Laplanders, employ the leaves of common butterwort, the *vulgaris*, to give consistency to milk, which being passed through

BUX

them in a strainer, acquires the consistency of butter, the serum being at the same time prevented from separating. Most animals refuse the leaves. The unctuousness of this plant causes the juice to be applied to chaps, and as a pomatum for the hair. Decoctions of the leaves are used by the common people in Wales, as a cathartic.

BUXTON-WATERS, are those warm mineral springs, which rise in the village of Buxton, in Derbyshire, and have long been celebrated for their medicinal properties.

The springs issue from several small fissures in a calcareous free-stone. They are numerous, and always afford a sufficient quantity of water for the various baths.

Buxton-water cannot be distinguished in its sensible properties from common spring-water, when heated to the temperature of 82°, at which degree of heat it invariably is, in the gentlemen's bath. It leaves no sediment, nor does it form any incrustation on the pipes, or stones through which it flows. The principal peculiarity is a large quantity of elastic vapour, which rises and forms bubbles, which pass through the water and break as soon as they reach the surface; it consists of azotic gas, mixed with a small portion of atmospheric air. On evaporation to dryness, a gallon of the water produced only 15 grains of residuum: consisting of 1½ grains of muriate of soda; 2½ of sulphate of lime, and 10½ of carbonate of lime.

CAB

The cases which derive most benefit from these waters are those of which a loss of action, and sometimes of sensation, affects particular limbs, in consequence of long continued, or violent inflammation, or external injury: hence chronic rheumatism succeeding the acute, is often relieved by this bath. The internal use of this water has been found of considerable service in symptoms of defective digestion, and derangement of the alimentary organs; often relieving the heart-burn, flatulency and sickness, and increasing also the appetite, animating the spirits, and improving the health. At first however, it sometimes occasions diarrhoea, which is salutary. It has also afforded relief in painful disorders of the bladder and kidneys, and has been likewise recommended in the gout.

We give the above account of the Buxton-waters as we have it from Dr. Willich. The age of quackery is not yet gone! In our deliberate opinion, there is absolutely little in Buxton-waters which might not be obtained from most springs in this kingdom, except the mere addition of heat. Every person in the least acquainted with medicine, must know, that draughts of warm, and even, sometimes, of cold water, will often absorb the gaseous, and other dyspeptic acidities of the stomach, and, in consequence, relieve the heart-burn and flatulency. When will FASHION cease to be the plaything of convenience and cupidity?

Buzzard. See FALCON.

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CABBAGE, or *brassica*, a genus of plants containing twenty-four species, natives of Europe, Asia, and Africa. They are the following:

The *orientalis*, found in the maritime rocks in the Eastern regions.

The *Austriaca*, or Austrian cabbage, with deep yellow flowers.

The *campestris*, or common field-cabbage, found wild in our own country.

The *arvensis*, found in fields in the south of Europe.

The *alpina*, found in Switzerland with erect petals.

The *Napus*, or rape; colewort: na-

CABBAGE

view. Traced easily in our own fields. See RAPE.

The *rapa*, or turnip, cultivated in our fields. See TURNIP.

The *oleracea*. In its wild state, an inhabitant of our sea-cliffs, but from the different species of which originate all the cultivated kinds of cabbage, both red and white savoy, borecole, Scotch kale, broccoli and cauliflower. See CAULIFLOWER.

The *Richerii*, a native of the Alps. The *Cretica*, a native of Crete. The *suffruticosa*, an African plant. The *Chinensis*, or Chinese cabbage. The *violacea*, also a Chinese plant. The *subbastata*, of the islands of the Archipelago, with yellow flowers. The *polymorpha* of Hungary and Siberia. The *teretifolia* of Africa. The *erucastrum*, of the south of Europe. The *seruca*, of Austria and Switzerland. The *pinnatifida*, of Africa. The *elongata*, of Hungary. The *cheiranthus*, of the south of France. The *rescaria*, of Spain. The *lyrata* of Africa. The *crassifolia* of Egypt. They are most if not all biennial.

The varieties of the *oleracea*, or as it has been sometimes called, *brassica capitata*, which are cultivated for culinary purposes, are very numerous. The common white, red, flat, and long-sided cabbages, are chiefly for winter use. Hence in their cultivation their seeds must be sown in the middle of March, in beds of good fresh earth; and in April, when the young plants will have about eight leaves each, they should be pricked out into shady borders, in spaces about three inches square. Towards the middle of May they should be transplanted to the places where they are to remain. These cabbages will be fit for use soon after Michaelmas, and will continue till February, if the weather be not very severe and wet. The Russian cabbage is less common than those above. It is to be raised like them; but from its diminutive size, the plants may be placed nearer each other. It is fit for use in July.

The early Battersea, and sugar-loaf cabbages, are sown for summer use, and

are commonly called Michaelmas cabbages. They should be sown in July. The savoy is for winter use, and are to be sown about the beginning of April; they are to be treated as the common cabbage, and planted out at two feet distance, in an open place. The borecole may be cultivated in the same manner, but they must be planted only at one foot distance; these are not fit to be cut till the frost has nipped them.

The best method of obtaining good cabbage seed, is to choose out some fair plants in October, pull them up and hang them up three days, with the root upwards, in a shady place; then plant them under a warm hedge, burying the whole stalk, and half the cabbage in the earth; cover them with culm if the winter be severe, and in spring they will shoot out many branches. When these begin to pod, the ends of the upper ones should be cut off, to give strength to the other pods. When ripe, let the seeds be threshed out and kept dry.

Cabbage, as an article of food, is generally in low estimation. But when it boils soft and tender, we do not think, with a proper mixture of animal food, and eaten occasionally, that it is by any means to be despised. That which approaches the nearest to cauliflower is unquestionably the best. Some invalids are obliged to abstain from this vegetable, in consequence of its being productive of flatulence, whilst others will eat it with complete impunity: we have even known stomachs most decidedly dyspeptic, which could digest it without the slightest inconvenience. It should not be forgotten, that cabbage may be boiled too much, as well as not enough. If all its nutritive properties be extracted in the water, no wonder that the residuum should be good for little. See SOUR CROUT.

The culture of cabbages for the feeding of cattle in winter and spring, on all stiff and strong soils, which are too moist and heavy for the successful practice of turnip husbandry, is of great importance. Very little danger attends

CABBAGE

the crop ; and the quantity of food produced is considerably larger in the same space of ground, than that of turnips.

Different sorts of cabbages are used for field culture ; but the most useful, and the most capable of withstanding the severities of our winters, are the *Scotch*, the *drum-head*, the *American*, and the *open green* cabbage, or *spring kale*. The first (if the true flat-topped) cannot be injured by frost. The second is extremely hardy. The American is not only of a large size, but continues good to a late period in the spring. The last is perfectly hardy, and continues good till the beginning of May. Besides these, the varieties called *Flat Dutch*, *Yorkshire*, and *Savoy*, and many others, may be planted in warm situations.

In selecting the seed for raising cabbage plants, care should be taken that it be obtained from the most perfect plants of the different kinds ; and that they are such as have seeded without any others of the *same tribe blowing* near them. It will be best, therefore, to plant such for seed by themselves. One ounce, or an ounce and a half of good seed, is sufficient for sowing a bed fourteen feet long, and five or six feet in width, or for raising two or three thousand plants ; in which proportion, half a pound will afford more plants, than are sufficient for planting an acre.

Where the produce is to be consumed in December, January, or February ; the seed should be sown in July or August the preceding year, and the plants be put out in March, April, or May the following year ; but if it be intended for consumption in March, April, or May, the seed should be put in about the latter end of February, or beginning of March in the former year, and the plants beset out the first or second week in June and July in the same year. These periods of sowing and transplanting, should be attended to with considerable exactness, in order to procure good and certain crops. Drilling the seed at once upon the land in rows of the width which the plants are to stand

is sometimes adopted, and with success.

Repeated, and deep ploughing, to prepare the land for this crop, and exposing as large a surface as possible to the action of frosts during the winter season, is extremely necessary. Three ploughings are generally sufficient, but the number must vary according to the nature and state of the land.

The planting out of this sort of crop, should be done as soon as possible after the land has been well saturated with rain. The distance of the plants from one another, should be so as to allow the ground to be cultivated, and kept clean by the plough : and such distance permits also the plants to attain a large size. The long-sided, flat Dutch, and Scotch, should be planted for the winter season two feet by four, or 18 inches, by four feet. For the spring season, the flat Dutch and Scotch, 18 inches, by four feet ; the turnip rooted cabbage, one foot by four. For all the larger sorts of cabbages, however, the most advantageous distance is three feet each way, on strong rich soils ; and on the lighter soils, two feet and a half. For the smaller sorts, two feet each way, on strong soils, and eighteen, or twenty inches on light. From five to seven thousand plants are generally sufficient for an acre of land.

There is scarcely any crop which derives more advantage from having the soil frequently stirred, and applied to the roots of the plant, than the cabbage. This is accomplished by means of plough, horse, and hand hoes. It is only by a due repetition of these operations, that the plants attain their most perfect growth and size.

When the crops are sown in the drill method in April where the plants are to remain, they should be thinned the following month, when the plants are three or four inches high, by hand-hoeing, in order to the next operation of this kind, which is to leave them at the proper distances, eighteen or twenty four inches, as the nature of the soil may be.

The depredations of the fly, or beetle,

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as well as the caterpillar, may in a great measure be prevented, by dispersing wood-ashes, soot, lime, or other similar matters in a powdery state over the young plants, on the first appearance of the insects.

The produce of cabbages per acre, has been estimated from twenty to thirty tons.

In the application and expenditure of cabbage crops, as they are liable to a considerable diminution of quantity, by remaining over the winter to the spring months, the most economical use of them, is to give them late in the Autumn, while their leaves are in perfection, to such neat cattle, and sheep, as have been brought considerably forward in the pastures, during the summer season. In feeding milch cows at the same period, they may be of great utility; whether the whole plant be made use of, or only the green leaves, which may often be removed without much injury to the cabbages. When employed in this way, without any other food, an acre has been found sufficient for four or five cows, and with straw, and a little hay, for seven or eight. In consuming them, the cows should be always confined to the farm-yards, and not be suffered to eat them after being scattered on the ground: much waste being by this method prevented. They should not be stacked, but cut off from the ground as they are wanted.

In whatever manner cabbages are consumed, it is of importance to the succeeding crops, that they be wholly removed from the land in the early part of the spring, before they begin to throw up their flowering stems, and run to seed.

On the whole, as cabbages may be cultivated at no great expense, and resist the severity of the winter more effectually than turnips, and are equally palatable and nutritious to various animals, they may be had recourse to with great advantage in soils, and situations not adapted to the turnip, and especially where a large quantity of green food is wanted for milch cows in autumn and winter.

CABBAGE, the **ANJOU**, is a shrub, a native of France, in the western provinces of which, and also in Glamorganshire, and other parts of Wales, it is successfully cultivated. It is leguminous, and equally useful both for food and fodder. It will grow on indifferent soils, endures the severest winter, yields abundance of sprouts during the spring, and produces abundance of seed, although the shoots be ever so frequently gathered. Nor does it produce flatulencies, or uneasiness of the stomach; it is so tender that a minute's boiling is a sufficient dressing. Cattle also eagerly eat it, and it is said to increase the milk of cows.

CABBAGE - TREE, **CABBAGE-PALM**, or *Areca*, a genus of trees containing three species: the *catechu*, and the *oryzaformis* of India; and the *oleracea* of the West Indies. They are all lofty and elegant trees, shooting up as straight as an arrow, and beautifully arching their branches towards the soil. The *oryzaformis*, or rice-shaped, bears a fruit used for chewing by the inhabitants of Cochin China, and Amboyna, along with the betel-leaf.

The *oleracea* is almost the crown of the vegetable world; every part of this tree is useful. Its trunk is perfectly straight, about seven feet in circumference, near the ground, tapering as it ascends, and often reaching the height of 170, or 200 feet. Its numerous branches shoot forth at about five feet high from the ground in a circular direction, the lowermost spreading horizontally with the utmost regularity; while the extremes of many of the branches bend wavily down like so many plumes of feathers. These when full grown, are often more than twenty feet long.

The pithy interior part of the leaf is filamentous, and used like hemp or flax for cordage of every kind. The fruit is the widely-celebrated cabbage, lying towards the top of the trunk, under the leaves in thin snow-white brittle flakes, sweeter in taste than the almond, but strongly resembling it. The sockets, or grooves, formed by the foot-

stalks of the branches are used by the natives as cradles for their children. On the inner side of the younger foot-stools, are tender pellicles, which are converted into paper. The trunk serves as gutterings: the pith produces a kind of sago, and the nuts, called *Areca* nuts, yield oil by decoction.

CABBAGE - TREE BARK, or *Cortex Geoffroyæ inermis*, is the bark of a tree growing in Jamaica, and has been frequently used with success in destroying and expelling the long round worms which infect the human intestines. But from the difficulty of administering it without its producing vomiting, delirium, and other alarming effects, it has not been generally used in this country. Its dose in powder is from one scruple to a drachm.

CACAO, CHOCOLATE-TREE, or *Theobroma*, a tree of which there are two species, as follow :

The *cacao*, or *genuine* chocolate-tree, is a native of South America. It rises to the height of twenty feet ; its flowers are red : it delights in shady places, and deep vallies. The pods are oval and pointed. The *cacao*-nuts, which resemble a large olive in size and shape, being gently parched in an iron pot over the fire, the external coat separates easily. The kernel is then levigated on a smooth stone ; a little annatto is added, and with a few drops of water is reduced to a mass, and formed into rolls of one pound each. This simple preparation of **CHOCOLATE** is the most natural and the best. It is in daily use amongst most families in Jamaica, where the tree is largely cultivated, and affords a nutritious food for children, as well as adults.

This species is cultivated in our own hot-houses as a foreign variety, and is increased by seeds obtained from abroad.

The *Guianensis*, with a reddish downy fruit ; a native of Guiana.

The **CHOCOLATE** made abroad, cannot by law be imported into this country, consequently all chocolate consumed in Great Britain, ought to be made here. It is composed principally of the kernel of the *cacao*-nut as above men-

tioned ; but the art is in very few hands ; and we believe that a small portion of soap is added to most British chocolate, in order to cause it to froth when it is dissolved in hot water. It is said that good chocolate ought to possess a brown colour, inclining to red, and rather lively than faint ; a smooth surface not affected by mere contact of the hand ; a fine and uniform consistence on breaking it, without any granulated particles ; and that it should readily melt in the mouth, leaving no roughness or astringency, but rather a cooling sensation on the tongue. This last quality is the most decisive criterion of genuine chocolate. We have, however, seen chocolate made in the West Indies, which does not answer to the above description, although as good, if not better than our own. It is lighter coloured and by no means so uniform and smooth in its fracture. Chocolate must be, by law, made up either in one pound, half pound, or four ounce papers, with such marks, or stamps, as shall be devised by the commissioners of excise.

As an article of diet, chocolate has been considered a nutritive and wholesome food. For persons in health it certainly is ; but in the manner in which it is taken, generally very strong, from its oleous properties, it cannot be recommended for valetudinarians, who labour under dyspeptic complaints. To such persons, all fat and oleous food is well known to be detrimental. If chocolate be taken by them, it ought to be taken weak. The next article suits them much better.

CACAO, or *Cocoa*, a preparation made, and sold in Great Britain, from the *Cacao*-nut, or from the shells of it, or from a mixture of both. To valetudinarians, whose stomachs are weak, and to almost all persons troubled with dyspepsia, *cocoa* affords a pleasant and agreeable breakfast, mixed with milk, and drunk lukewarm ; and in every respect for such persons, is very superior to chocolate. If instead of eating bread and butter, or toast and butter with it, cold roast beef or mutton, with bread, be oc-

casionally substituted, avoiding the fat, the valetudinarian will often have reason to congratulate himself on the change.

CACTUS, a genus of plants, containing twenty-eight species: all natives of South America, or the West Indies. They may be sub-arranged into those of a roundish form, generally called Melon thistles; creeping, with lateral roots, commonly named Cereuses; erect, supporting themselves, and called Torch-thistles: compressed, with proliferous joints, called Prickly pears, or Indian fig. The species of most note are the following.

The *grandiflorus*, producing, about the month of July, a very magnificent flower, with an exquisite odour, which opens at sun-set, and only continues in perfection six hours. This is a cereus.

The *tuna*, with proliferous joints, and a large yellow flower. A prickly pear.

The *coccinellifer*, also with proliferous joints. It is the common habitation of the coccus, or cochineal insect: whence its specific name. This is also a prickly pear.

The propagation of all the species of this remarkable plant is by cuttings, which must be laid in a dry place ten days or a fortnight before they are planted; or if it be three weeks, there is less danger of their miscarrying. They should be planted in June or July, in small pots filled with a light sandy earth, with a mixture of lime rubbish. The pots should then be placed in a gentle bed of tanner's bark, and to be watered gently once a week. Air must be given them by degrees, and, in September, they should be removed into the stove where they are to remain the winter. They should always have a dry situation, and never be exposed to the open air, even in the midst of summer. They may be brought in small pieces from the West Indies packed in straw, and will grow when planted here, as well as when cut from our own plants.

CAJUPUTI OIL, is obtained by distillation from the leaves of the *melleuca leucodendron*, a small tree grow-

ing in the East Indies, having a black trunk, with white leaves and branches. This oil, when newly drawn, is limpid, pellucid, and volatile: on account of its high price, it is said to be often adulterated with oil of turpentine, and coloured with resin of millfoil. The odour of this oil, as it is brought to England, is, at first, similar to a mixture of oil of turpentine and camphor, but it soon becomes fragrant and agreeable; the taste is pungent, and resembles camphor very much. It is limpid, transparent, and generally of a blueish green colour, which is said to be partly derived from the copper flasks in which it is imported. When dropped on the surface of water, it diffuses itself over it, and very soon evaporates, which is a good test of its purity; it also burns rapidly, leaving no residuum; and dissolves like most other essential oils, in spirit of wine, and partially in water.

It is a highly diffusible stimulant, antispasmodic, and diaphoretic. When taken into the stomach, it produces a sensation of heat, fills and quickens the pulse; and soon afterwards a copious sweat breaks out. It is efficaciously given in dropsy, chronic rheumatism, palsy, flatulent colic, and other spasmodic and nervous affections. As a local and external stimulant, it is employed diluted with oil, as an embrocation to allay the pain of gout and rheumatism, and to restore vigour to joints after sprains. When put into a carious tooth, it lulls the pain of the tooth-ach. Much benefit has also been derived in defective vision from a weakened state of the eyes, by rubbing it on the temples. The dose internally, is three or four drops on a lump of sugar.

This oil is a perfect solvent of Indian rubber, and forms with it an excellent drying varnish.

CAKE, a fine sort of bread, which has received this denomination on account of its flat and round figure.

There are various compositions under the name of cakes; such as seed-cakes, made of flour, butter, cream, sugar, spices, &c.; and plum-cakes, cheese-

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cakes, sugar-cakes, &c. *Oat-cakes* are made in Yorkshire, Wales, and Scotland.

Cakes made of wheat-flour alone, properly fermented, and not eaten till twelve hours after being baked, are very wholesome; and oat-cakes, to those accustomed to them, appear to be also wholesome, although by no means so nutritious as those made of wheat-flour. But the whole tribe of cakes, made with a number of ingredients, such as seed-cakes, plum-cakes, &c. are, as articles of food, bad, because some or other of their ingredients will most commonly produce fermentation in the stomach. By dyspeptic persons, and most valetudinarians, they should be carefully avoided.

CALAMINE, or Calamy, *Calaminaris*, an ore of zinc, used in the manufacture of brass; it is also an ingredient in the next article, which see. See also **ZINC**.

CALAMINE CERATE. This cerate has been long known to the British public under the name of Turner's Cerate, Evans's Sulve, Epulotic Cerate, &c.; it is made in the following manner: take of prepared calamine and yellow wax of each four ounces; of olive-oil eight liquid ounces. Melt first the wax, then add the oil; being removed from the fire, as it begins to cool sprinkle in the calamine, and stir continually till it is cold.

CALAMINT, or *Melissa cretica*, a species of balm indigenous to this country. It smells very much like wild mint, though more agreeable. It is often used by the common people in form of tea, against weakness of the stomach, flatulent cholic, uterine obstructions, &c.

Calamus aromaticus. See **SWEET-FLAG**.

CALCAREOUS, a term applied to a variety of natural bodies which contain lime. Lime-stone, marble, and chalk are calcareous substances; their uses in agriculture, building, &c. are various and great. See the respective articles, and **LIME**.

CALCINATION, in chemistry, the

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reduction of substances to a calx by fire. By this process calcareous substances are reduced into quick lime, metals into oxides, or, as they were formerly termed, calces; and vegetable matters into white ashes. In metallurgic, and some other operations, the term is employed to denote the process by which ores are deprived of their salts and water, as a preliminary step towards the separation of the metal, &c. The calcination of metals is now more properly called **OXIDATION**, which see; see also **FLUX**.

CALCIUM. When lime is electrized negatively, in contact with mercury, an amalgam is obtained, which, by distillation, affords a white metal. This is called *calcium*, and when exposed to air and gently heated, it burns and produces the *oxide of calcium*, or lime. See **LIME**.

CALCULOUS DISORDERS, are those complaints which arise in the kidneys, urinary passages, or bladder, from collections of sand, gravel, or stones, producing a variety of distressing and alarming symptoms. See **GRAVEL** and **STONE**.

CALENDAR, or **KALENDAR**, a distribution of time accommodated to the uses of life; or an almanac, or table, containing the order of days, weeks, months, feasts, &c., occurring in the course of the year.

There are various systems of chronological computation according to the different forms of the year in particular countries, such as the Julian, Gregorian, &c.

Julius Cæsar, with the aid of Sosigenes, a celebrated astronomer of those times, reformed the Roman Calendar, whence arose the Julian, or *old style*. Finding that the sun performed his annual course in 365 days and a quarter nearly, he divided the year into 365 days, but every fourth year into 366 days, as stated under bissextile. This was further reformed by order of pope Gregory XIII; whence arose the term Gregorian calendar and style, or *new style*: for the Julian year being too long by nearly eleven minutes, it became ne-

cessary to omit three leap years in the course of four centuries. The Gregorian computation has been received in most foreign countries ever since the reformation of the calendar in 1582; except some northern countries, as Russia, &c. It commenced in all the dominions under the crown of Great Britain, in 1752. At which period the natural day next following the second of September was accounted the fourteenth, the eleven intermediate days of the common calendar being omitted. The supernumerary day in leap year being added at the end of the month of February, and called the 29th of that month.

There is a little work relative to the calendar which has been published annually in Great Britain for some years past, to which we would direct the attention of our readers. It is called *TIME'S TELESCOPE*, and consists of a *melange* of amusing, instructive, and pleasing information: on natural history, astronomy, chemistry, biography, &c., with an elegant selection of poetical *bouquets* from our best modern poets, which are sweet smelling and suitable to be worn occasionally in the bosom.

CALENDER, a mechanical engine used by cloth-lappers for dressing and finishing cloths and stuffs of various descriptions; and also by calico-printers, in order to extend and smooth the surface of their cloths.

The old machine, called a *mangle*, is the simplest and most rude approximation towards calendering, as now performed by wooden and metallic cylinders, or a combination of both.

CALF, in zoology, the young of a cow. There are two methods of rearing calves; one is to let them run about with the dam till sufficiently old to live by feeding on grass; a plan which is productive of the best cattle; the other is, to take them from the dam at ten days, or a fortnight old, and to suffer them either to suck the cow, twice or three times a day, or to remove them from the cow entirely, and feed them with warm milk and other potations: these last methods are more commonly adopt-

ed to fatten them, and at the end of a few weeks to kill them for *veal*. For this purpose the calves are usually placed in a house, or shed, on an elevated stage, so that their excrements and urine may pass off from them easily, and their coats be kept dry and clean. The calves are also confined by a collar, so that they cannot move about, but are just enabled by such confinement to rise up and lie down. We know also that it is the practice with many farmers to put no litter on the stage; but, we think in this that they greatly err: for the warmer an animal is kept, so that he is not kept above his natural temperature, the sooner he becomes fat, and, under given circumstances, with less food. Besides, such naked stages are frequently the cause of pain to the animal; and every animal which is in pain, or which frets, will not fatten so soon as one which is wholly at his ease. The trouble of removing the litter every day, is by no means to be put in competition with the advantages to be derived from keeping the calf warm and easy.

Where the calves are to be suckled by the cows periodically during the day, it is essential that the suckling-house be spacious and airy, having ties on one side for confining the cows, and on the other a set of cribs, or pens, for containing the calves. It is also advisable that the calves should as much as possible be excluded from the influence of light. And it is of the utmost consequence, wherever they are confined, that they should be kept perfectly clean and free from every sort of disagreeable smell.

The milk, if given to them "by the hand," should be made previously warm to about the heat of the milk of the cow.

The length of time for perfecting the business of fattening varies; but in most cases it is from six or seven, to eight or nine weeks. In some districts barley-meal and linseed boiled into a kind of jelly, hay-tea, and such like materials, are sometimes given to calves in the course of fattening; but, although such feeding may occasionally be found

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advantageous, the milk of the cow is unquestionably the best and most natural mode of fattening them.

It has been found that a good cow will yield a full supply of milk for two calves, whilst they are young; as the calf increases in size it requires, of course, more milk; when, therefore, the whole produce is demanded for one calf, another new milch-cow should be provided, and these two cows will abundantly supply three calves with milk till the oldest is fit for the butcher. Or the surplus milk from a cow feeding but one calf, for some time, can be reserved for butter, &c.

Young calves, when permitted to suck their fill, are often troubled with a looseness or scouring. To prevent this, for the first fortnight or three weeks they should be stinted in their allowance, taking care that they do not pine or decrease in flesh for want of food. After this age they should be allowed to suck as long as they choose, and every means ought to be taken to increase their appetites. Chalk may be used for this purpose, as well as for correcting the acidity in the stomach. Salt sprinkled in the troughs likewise acts as a stimulus to the appetite; and some persons give them balls, composed of flour, pounded chalk, and milk, with the addition of a small quantity of common gin, and sometimes a little tincture of opium. Of these balls two are given about the size of a walnut, once a day, or oftener, to each calf. A chalk-stone is also sometimes suspended within reach of the calf, so that he may lick it; and bleeding once or twice during the fattening is also recommended. But, we believe that most, if not all, of these arts are wholly unnecessary where the calf is healthy, and has a full supply of milk, either by sucking the cow, or its being given him by hand.

Calves, if designed to be reared, should be weaned between January and till the latter end of March: as those which are weaned later seldom come to any great size. Such calves should have new milk at the beginning, afterwards a mixture of new and skimmed

milk, then simply skimmed milk, with a little barley or oatmeal, or flour stirred into it. A small lock of sweet hay should also be kept tied up within their reach, to induce them to eat that sort of food as soon as possible. It is not absolutely necessary to continue the giving of milk after the calves are a month or six weeks old, but they are the better for it when it can be done.

Calves which are weaned should be turned abroad during the day-time into a small close near the farm-yard, where there is a good bite of grass. For the first month or six weeks they ought to be returned to their pens at night, but afterwards they may be left out all night; and the food given them may be lowered by degrees, so that at last it only amounts to simple water: for, when they become twelve or fourteen weeks old, they will be able to satisfy themselves with grass. At Michaelmas, or soon after, they should be taken into the yard, or a small close, to themselves, and have the best and sweetest hay, with a shed to cover them during the winter. No stock will pay better for such cautious management.

The best time of *castrating calves* is soon after they are dropped. Some advise three weeks or a month: but a week, or fortnight at most, is, perhaps, the most eligible time. The spaying of the female calf is an operation of great nicety and dexterity. A spayed female calf is found more quiet in pasture than a milch cow, and it also fattens more expeditiously.

Relative to the *distempers* of calves, we have already mentioned their scouring; which, and costiveness, are their principal diseases. The former should not be hastily interfered with, as it is often a salutary evacuation. If, however, it becomes violent, or continues longer than a day or two, gruel made with wheat-flour, or arrow-root with two or three drachms of prepared chalk, may be given two or three times a day. If this fail, add to the chalk two drachms of tincture of opium, one drachm of ginger, and four ounces of peppermint-water. In obstinate cases, two or three

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drachms of powdered catechu may be given; and the dose of the tincture of opium may be also increased. Sulphate of soda and castor-oil are the best remedies for costiveness. The dose of each is from six to eight ounces, if given separately; if joined, about four ounces of each.

They are also liable to be *blown*, or *hoven*, in which case the thrusting of a pen-knife through that part of the swelling which rises highest near the hip-bone, and introducing a large quill into the orifice, have relieved them. The *shoote* attacks them a few days after they are calved. It comes on like a colic, which, going off, is succeeded by a discharge taking place from the bowels; the complaint, however, is sometimes fatal before the *shoote* or discharge appears. The calf also loaths and refuses his food. The best medicine is milk well mulled with eggs; or, eggs with starch, properly mixed with an addition of oil, melted butter, and mucilaginous roots and seeds, such as linseed, aniseed, &c. The *gut-tie*, being a total stoppage in the bowels, except a copious discharge of blood and mucus, accompanied by fever, the animal lying down, kicking and groaning, is a disease occasioned by an erroneous method of castration, and, unless shortly removed, soon proves fatal. The only cure is to make a perpendicular incision four inches under the vertebræ of the loins over the paunch, or stomach, and introduce the arm to find the part affected, the beast being kept in an erect position. The *tie* being obviated, to remove the stoppage in the stomach and carry off the fever, four ounces of sulphate of soda, two ounces of cream of tartar, and one ounce of senna infused into two pints of boiling water, to which is to be added half a pint of olive-oil, are to be given: the whole of this is to be worked off with gruel.

Calf's-snout. See SNAP-DRAGON.

CALICO, a cloth made of cotton-thread, manufactured originally at Calicut in the East Indies. But latterly, since the establishment of machines for spinning cotton, to such perfection is

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the manufacture of this article brought, and so cheap can it be afforded, that the raw material is now imported from India, manufactured in various parts of Great Britain, and sent out to that country whence the manufacture was originally derived.

Cotton cloth is an article which, in its powers of conducting heat, holds a middle state, between linen on the one hand, and woollen cloth on the other. It has also for some years past been gradually superseding the use of linen for shirts, and other garments worn next the skin; but it is by no means a succedaneum for flannel. It is, notwithstanding, preferable to linen, and although it is not so durable as the latter article, it enters very largely into domestic use; its comparative cheapness being a great inducement.

Calings. See CORKINGS.

CALLOUS, in farriery is a term applied to many hard and indolent swellings, arising from severe strains of the back sinews, on the knee, in consequence of falls, or blows, &c. The best remedy for such callosities is blistering, which may be repeated twice or three times, if found necessary, taking care that the effects of one is quite gone, before another is applied. In such swelling about the back sinews, firing is the best remedy.

CALLUS, the bony matter deposited between the divided ends of broken bones, about the fourteenth day after the fracture.

CALOMEL, a well known preparation of quicksilver and muriatic acid, called in the London Pharmacopœia, *submuriate of mercury*, but by the most recent nomenclature, *chloride of mercury*. Several methods have been adopted by chemists, for the obtaining of this medicine: the method ordered by the London College is as follows: take of oxymuriate of mercury one pound: of purified mercury, *by weight*, nine ounces. Rub them together until the metallic globules disappear; then sublime: take out the sublimed mass, reduce it to a powder, and sublime it in the same manner twice more successively. Lastly, bring it to the state of

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a very fine powder; throw this into a large vessel full of water; then stir it, and after a short interval, pour the supernatant turbid solution into another vessel, and set it by, that the powder may subside. Having poured away the water, dry the powder.

Calomel is obtained by the first part of the above process, in the form of a dull semitransparent mass, the specific gravity of which is 7.2. It is tasteless, inodorous, and very nearly insoluble; and has a light yellow, or ivory colour, which deepens by long exposure to light. If scratched, it gives a yellow streak, which is very characteristic, and does not belong to sublimate. As it is obtained in the shops, it appears in a fine, heavy, whitish powder, and in this state it is called *prepared calomel*; the latter part of the above process directs how it is to be thus obtained; but, however, calomel is prepared in the large way in London, in a much more easy and expeditious manner. Although it is a very important and powerful medicine, and ought to be given with caution, yet it can scarcely be called poisonous, since in considerable doses it only proves purgative. Lime-water, and the alkalies, when rubbed with it, instantly render it black, a circumstance which is a test of its purity: for if it contain any corrosive sublimate, a yellow tint is mingled with the black, on the addition of lime-water.

Calomel is the most useful of the preparations of mercury, and is more generally employed in medicine, than almost any other remedy in the whole range of the *materia medica*. We think also, that it is employed too often, and too indiscriminately: it is, nevertheless, a most powerful medicine. It is antisyphilitic, antispasmodic, alterative, deobstruent, purgative, and an errhine. As a remedy for syphilis it can be confided in, when its disposition to run off by stool is counteracted by opium; in the same state of combination, it has been also found efficacious in epilepsy, locked jaw, and tetanus; and in spasmodic strictures, arising from virulent gonorrhœa. As an alterative and deob-

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struent, it is used in cutaneous eruptions, such as lepra, and the itch; in which cases it is combined with antimonials and guaiacum; it is also given in complaints of the liver, and glandular obstructions; in dropsies it assists the action of squilla and fox-glove; and as a purgative, it may be employed with safety in almost every form of disease not attended with visceral inflammation, or where there is not great irritability, and delicacy of habit. It does not, however, always act with certainty even in large doses, and hence it is generally combined with aloes, jalap, scammony, or some other active cathartic. The usual dose to affect the system, and produce an increase of saliva, is from one grain to two in a pill with opium, given night and morning; and from three to eight grains act, in general, as a purgative. In some complaints, such as the yellow fever and croup, this dose has been repeated every two or three hours, until upwards of 100 grains have been taken in a very short space of time. On account of its insolubility, and great specific gravity, it can be given only in the form of pills.

From its importance we have been somewhat minute in describing this medicine; but we cannot take our leave of the article without informing those persons who take calomel, as some do, habitually, or who take it, we fear too often thoughtlessly, that it is a powerful edge tool, which must do the constitution harm, if not judiciously managed. It is an easy matter to get mercury into the constitution, but it is by no means so easy to get it out of it. It may be very much doubted, whether many of the pains of the bones, under which siphylitic, and other patients labour, do not arise from the mercury, rather than from disease. For other preparations of quicksilver, see *CORROSIVE SUBLIMATE*, *ETHIOP'S MINERAL*, *QUICKSILVER*, *RED PRECIPITATE*, &c.; see also *TAN OINTMENT*.

CALORIC, a term used in chemistry to denote the cause of heat, as distinguished from the sensation. The principal sources of caloric, are the

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sun, combustion, and various other instances of chemical action, percussion, or collision, friction, the electric spark, and galvanism. See HEAT.

CALUMBA, or *Columba*, the root of an undescribed plant, growing in the forests of Oïbo, and Mozambique, on the eastern coast of Africa. The root is perennial, and is supposed to be a species of bryony. It is brought to this country, packed in bags or cases. It is in transverse sections, about two inches in diameter, and one-third of an inch in thickness. The bark is thick, and easily detached, internally the root is of a deep yellow; it has a slight aromatic odour, and a bitter taste. Its virtues are extracted both by water and by spirit of wine. It is antiseptic and tonic. In diarrhœas, arising from redundancy of bile, bilious remittent fever, and cholera, it is frequently of service, generally checking the vomiting. It also allays the nausea and vomiting which accompany pregnancy; it has also been found useful in stopping the severe diarrhœa and vomiting, which sometimes attends dentition. In puerperal fever; in phthisis, and hectic fever; and in dyspepsia, it has also been of service. It is usually given combined with aromatics, orange-peel, opiates, alkaline, or neutral salts, according to circumstances. The dose of the powdered root, is from fifteen grains to half a drachm, repeated three or four times a day.

An *infusion* of the root is ordered by the London College, to be made thus: take of calumbo-root sliced, one drachm; boiling water half a pint; macerate for two hours in a slightly-covered vessel, and strain. This may be given in dyspepsia, and the vomitings arising from pregnancy, as well as the severe diarrhœa and vomiting arising from the teething of children. The dose may be, for an adult, from one fluidounce and a half, to three fluidounces, given several times a day. For children, the dose must be proportionably less. See DOSE.

A *tincture* is also kept of this root in

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the shops. It may be made of two ounces and a half of the powdered root; of proof spirit two pints: macerate for fourteen days, and filter. The dose of this is from half a fluidrachm, to half a fluidounce.

CALUMNY, a slander, false charge, or groundless accusation. No vice can be more mischievous than calumny: nor is there a vice against the effects of which it is more difficult to guard. Calumny wears so many shapes, that it is often very difficult to distinguish it from truth. The publicity and effrontery with which assertions relative to individuals, or to facts, are made, although destitute of foundation, or truth, can be scarcely credited by those who are unacquainted with the public press, and private history; but certain it is, that many writings obtain their "bad eminence," principally by distorting the actions, and calumniating the motives of many praiseworthy individuals, who are, or have been bold enough to think for themselves, and who have the candour to avow their opinions. We are no advocates for severity of punishment, and, therefore, we do not call it down on the calumniator; but surely he whose pen, or tongue, is employed in so unhallowed an occupation, ought at least to find no abettors. It is scarcely necessary to add, that no person ought to give currency to a report relative to any one, without solid grounds for it: for want of such precaution, the peace of individuals, and of families, is often wounded both wickedly and wantonly; and sometimes even for ever.

CALX, properly signifies lime; but it has been heretofore used to denote the fine powdery substance into which metals, minerals, and other bodies are reduced by fire. The calces of metals are now termed oxides, because it is found, in their conversion from the metallic state into the state of calx, that the metal absorbs oxygen from the atmosphere, and that without the presence of air, containing a portion of oxygen, neither lead, iron, nor many other metals can be reduced to calces;

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these are, therefore, with more propriety now called **OXIDES**, which see ; see also **CALCINATION**.

Calx is also a term which has been applied till lately to some medicinal preparations, such as **CALX OF ANTIMONY**, &c. But the term is totally inapposite and improper. See **ANTIMONY**.

CALYX, in botany the outer covering of the flower, or the first of the seven parts of fructification, formed, according to Linnæus, of the cortex, or outer bark. This term includes not only the perianth, which is often exclusively called the calyx, or flower cup, but also the involucre, ament, spathe, glume, calyptra, and volva.

CAMBLET, or **CAMLET**, a stuff made principally of wool. It was formerly much in wear, and from its thickness and warmth, was very well calculated for the winter clothing of females. Fashion has, however, introduced other articles of dress, more showy indeed, but not so means so adapted to defend the body from cold, and those alternations of cold, which demand in our climate no ordinary attention, particularly from those whose employments are sedentary, and who have not an opportunity of taking that wholesome degree of exercise which gives health, vigour, and warmth to the body.

CAMBRIC, a species of very fine linen, first made at Cambray, in Flanders. The cambrics most in use in this country, are chiefly manufactured in Scotland and Ireland. The French cambrics are, however, still preferred, as being superior to the British : they may be imported into Great Britain in British ships, by the payment of a certain duty, and if packed in a certain way.

CAMBRIC MUSLIN is another species of cambric made of cotton, now manufactured in a very extensive way in Great Britain. So rapidly has the extension and improvement of this manufacture been, that good cambric muslin may now be bought for one-third, if not one-fourth of the price at which it could be obtained thirty years ago.

Although the wearing of this, and the foregoing article of dress, adds un-

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doubtedly to the elegance of the British fair, and from their cheapness, particularly cambric muslin, most females are enabled to wear it ; yet we suspect that many pulmonary consumptions are the offspring of such cold clothing.

CAMEL, *Camelus*, a genus of quadrupeds, consisting of seven species as follow :

The *Dromedarius*, Dromedary, or Arabian Camel, with a single bunch on the back ; inhabits the temperate deserts of Asia and Africa ; is domesticated in all the east, as also in Jamaica and Barbadoes. Many varieties in size and colour ; mild and gentle, wonderfully useful for conveying heavy burdens over dry sandy deserts ; will carry twelve hundred weight ; moves slow, and will not exceed its accustomed pace, nor carry beyond its usual weight : it is patient of hunger, travelling many days without water, and content with the thorny shrubs found in the wilderness ; kneels down to be loaded, or unloaded, at command of the keeper ; hair valuable ; flesh and milk eaten by the Arabians ; six and a half feet high ; hair soft, tawny grey, longer on the neck and bunch ; tail shorter than the legs ; the second of the four stomachs cellular, for the purpose of retaining water a long time in the dry deserts.

The *Bactrianus*, or Bactrian Camel, with two bunches on the back ; inhabits western India and China ; rarer than the last ; chiefly used by men of rank. It is larger and swifter ; the hind bunch bigger than that in front. Box-tree proves a poison to it when eaten as food. Gravid a year ; produces one young, which sucks two years, and is full grown the third. A second variety, supposed a hybrid, between this species and the last.

The *Glama*, or *Lama*, with a bunch on the breast ; back smooth. Inhabits the lofty mountains of Peru and Chili ; four feet and a half high ; in habits and manners resembles the Bactrian camel ; gregarious, and easily tamed. Gravid five or six months, produces one young ; carries one hundred and fifty pounds. Not used now by the Peruvians as a

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beast of burden so much as formerly ; flesh when fat excellent.

The *Huanacus*, or *Huanaco*. Inhabits the lofty mountains of South America, descending into the plains in winter. In habits like the preceding, but never associates with it. Four feet three inches high. Body yellow above, whitish beneath. Flesh, when young, good.

The *Arcuicanus* or Peruvian camel ; body woolly, smooth ; inhabits Peru and Chili ; in many respects resembles the sheep ; tail longer and wool finer ; the body white, black, or brown ; flesh good ; useful both in ploughing and bearing burdens.

The *Vicugna*, or *Vicuña*. Body woolly, smooth ; inhabits the highest peaks of the Andes in flocks ; timid, swift, patient of cold ; tamed with difficulty ; carries small burdens ; the flesh good ; in its tail and general figure it resembles a goat ; wool fine, silky, rosy, easily dyed. In its stomach is often found a bezoard.

The *Paco*. Bunchless, body woolly ; inhabits the higher mountains of Peru ; gregarious : below the vicuña in size, and incapable of carrying more than from fifty to seventy pounds ; flesh not so good ; wool longer, coarser, but still much employed in the manufacture of cloths ; body, in a wild state, above purple, beneath white : when tamed, varying with black, white, and tawny. Several of these species from their make have been called Peruvian sheep.

CAMELOPARDALIS, *Camelopard* or *Geraffe*, in zoology, a quadruped consisting of one genus and one species ; inhabiting Senna, Ethiopia, and some other parts of Africa. It measures at the shoulders seventeen, at the rump only nine feet high ; hence, in front, one of the tallest animals, yet at the same time from its peculiar lightness, highly elegant and picturesque ; it is gentle, timid, and swift. When about to lie down kneels like the camel. It has erect blunt horns, about six inches long. It feeds on leaves, the shoots of tall trees, and sometimes on grass. It is generally gregarious, being met with in groups of seven or eight, which, on

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being alarmed, fly with incredible speed in every direction.

Camline. See **GOLD**, and **PLEASURE**.

Cammock. See **REST-HARROW**.

Camomile. See **CHAMOMILE**.

Campanula See **BELL-FLOWER**.

CAMPHOR, or **CAMPHIRE**, *Camphora*, a white, solid, transparent substance, having a strong, peculiar, fragrant, and penetrating odour, and a bitter, pungent, aromatic taste. It is unctuous to the touch, yet friable, breaking with a shining foliated fracture, having an appearance of crystallization ; but although brittle, it is, in some degree, ductile, and therefore not easily pulverised. It swims in water, its specific gravity being 98. It dissolves in the fixed and volatile oils ; like these last it is volatile, inflammable, soluble in alcohol, and sparingly soluble in water. It is scarcely acted upon by the alkalis ; some of the acids dissolve, others decompose it.

When camphor is repeatedly distilled with nitric acid, it is converted into camphoric acid, which is a crystallizable substance, soluble in about 100 parts of water at the temperature of 60°, and in its own weight of alcohol. Its combinations with the metallic oxides are called *camphorates*.

Camphor is found in many vegetables, but the camphor of commerce is obtained from a tree called *Dryobalanops camphoru*, a native of the north-western coast of Sumatra. It grows to a great height, and the trunk, which is arboreous, often measures six or seven feet in diameter. The camphor is formed in the heart of the tree, occupying portions of a foot and a foot and a half long, at certain distances. It is found in a concrete state, and resembles whitish flakes in perpendicular layers, occupying a space the thickness of a man's arm. A middle-sized tree will yield nearly eleven pounds ; and a large tree double that quantity. It is also obtained from the wood, which is cut into chips, and submitted to a kind of distillation. It is imported into this country in chests or casks, and is in small granular friable masses of a dirty white,

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resembling in appearance half-refined sugar. It often contains earth and other impurities.

Camphor is stimulant, narcotic, and diaphoretic; but its stimulant powers are very transitory, and followed by sedative effects. In moderate doses it operates as a cordial, increasing the heat of the body, exhilarating, softening, and rendering fuller the pulse, and promoting diaphoresis; in larger doses it allays irritation and spasm, abates pain, and induces sleep. But in immoderate doses it produces vomiting, vertigo, delirium, convulsions, and other deleterious effects. It is beneficially employed in all fevers of the typhous kind, in the putrid sore throat, malignant measles, confluent small-pox, and as an addition to bark and opium to check the progress of gangrene; in many spasmodic affections, such as hysteria, epilepsy, chorea, asthma, and painful menstruation it has also been found beneficial. Its narcotic and anodyne effects being produced with very little increase of pulse, it has been successfully employed in allaying pain and irritation even in some inflammatory diseases; such as pneumonia, acute rheumatism, gonorrhœa, small-pox when attended with convulsions, gout, in the delirium of mania, and inflammatory fevers. Camphor is also given internally to obviate the irritating effects of other medicines, as mezereon, cantharides, the saline preparations of mercury, and drastic purgatives; to correct the nauseating properties of squill, and to prevent the irritation which it is apt to produce on the bladder.

Camphor is best given in a state of minute division, suspended in fluids by means of mucilage or the yolk of eggs; sometimes with magnesia. It may be advantageously united with ammonia, aromatics, opium, bark, and other tonics, in low fevers and diseases of debility; with calomel, antimonials, fox-glove, and neutral salts in inflammatory diseases; with the fœtid gums, in spasms, and convulsive affections; and with squill and ipecacuanha in pulmonary complaints.

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Externally camphor is used dissolved in oils, alcohol, or acetic acid, for allaying rheumatic and muscular pains. With the addition of laudanum it has been found of great efficacy when rubbed on the abdomen in flatulent colic, dysentery, and inflammation of the viscera. It is also useful in ophthalmia; and, dissolved in oil, as an injection in *ardor urinæ*; in a glyster it is efficacious in removing the tenesmus occasioned by ascarides or other irritations in the rectum. A pill of camphor and opium put into the hollow of a carious tooth, affords sometimes immediate relief. Camphor dissolved in spirit of wine is also a useful liniment for the cure of recent chilblains.

The dose of camphor is from two grains to one scruple, repeated at shorter or longer intervals according to the extent of the dose. The bad effects of an overdose are most effectually obviated by opium.

CAMPBOR, MIXTURE OF, formerly called julep of camphor, is made thus: Take of camphor half a drachm; of rectified spirit of wine ten drops; of water one pint. First rub the camphor with the spirit of wine, add afterwards gradually the water, and strain. The dose is from one to two fluidounces given every three or four hours.

Camphor, Spirit of, See SPIRIT OF WINE AND CAMPHOR.

CAMPBOR, COMPOUND TINCTURE OF. It is thus made: Take of camphor one scruple; of hard opium bruised, and of benzoic acid, of each half a drachm; of proof spirit one pint. Macerate for fourteen days and strain. Half a fluidounce of this tincture contains nearly one grain of opium. It has been long known under the titles of *Paregoric Elixir*, *Essence of Coltsfoot*, &c., and is a useful anodyne in chronic asthma, hooping-cough, and catarrh after inflammatory symptoms have subsided. The dose is from one fluidrachm to three fluidrachms occasionally, in the above cases. The full dose is best taken before going to bed, to procure rest. When a cough is troublesome by day, a less quantity taken every hour or two

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may be found to answer as well; and, perhaps, in many cases better.

Campion. See *LYCHNIS*.

Canada | *Balsam.* See *BALSAM OF CANADA*.

CANAL, an artificial cut in the ground, which is supplied with water from rivers, springs, &c., in order to make a navigable communication between different places. The utility of canals is now very generally admitted; their number has been gradually increasing in Great Britain for many years past. The **REGENT'S CANAL**, now completing in the neighbourhood of the metropolis, is one of the latest works of this kind; it passes through a hill, by a tunnel three quarters of a mile long, under a considerable part of Islington, and is to unite with the Thames below Blackwall.

Canals are very commonly used as bathing-places; but unless the water be changed in them very often, which is not the case, except where the locks are numerous, we think that such stagnant water for bathing ought to be avoided, especially in the summer season.

Canary Bird. See *FRINGILLA*.

CANARY GRASS, or *Phalaris*, a genus of plants containing eleven species, natives of India, the Cape, and the south of Europe. Three of them are common to our own road sides and sandy fields. Of these the *Canariensis* is cultivated for the sake of its seeds, which are found to be the best food for canary and other small birds. It is an annual plant, and requires the soil to be made very fine on the surface. The seed should be sown the first dry week in February. The plant is generally ripe in the beginning of September, and requires to be a considerable time in the field, but it is seldom injured by the weather.

Canary Seed. See the preceding article.

CANCER, in medicine, a painful hard indolent tumour, most commonly of a glandular part, which terminates in the foulest ulcer. Those tumours were so called by the ancients which

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exhibited large blue veins like crab's claws: hence its name.

Cancers arise sometimes from no apparent cause; but they are often occasioned by a bruise or contusion, which might be even a very slight one; hence they are more common in the lips and in the breasts of women than in any other part of the body. They have been generally distinguished into *occult* and *open*. By the former are meant such hard scirrhus swellings as are attended with frequent shooting pains, and which at last generally terminates in the latter. By the open cancerous ulcer is understood that species of sore which commonly succeeds hard swellings of the glands, although, in some instances, it occurs without such previous hardness. The edges of the ulcer are hard, ragged, and unequal; very painful, and reversed in different ways, sometimes turned upwards, and backwards, and on other occasions, inwards. The whole surface of the sore, is commonly very unequal, there being in some parts considerable risings, and in others deep hollows. The discharge for the most part is a thin dark-coloured fœtid ichor: and often possesses such a degree of acrimony, as to excoriate, and even destroy the neighbouring parts. In the more advanced state of the disease, by the erosion of blood-vessels, which occurs, considerable quantities of pure blood are discharged. Some cancers are fixed, others moveable; some pale, others inflamed. They sometimes remain harmless and indolent for years; at other times they increase hastily, ulcerate, and soon prove mortal.

Patients labouring under real cancerous affection, universally complain of a *burning* heat over the whole ulcerated surface: which, in general, is the most tormenting symptom which attends the disorder; and those shooting, lancinating pains, which were troublesome in the earlier state of the complaint, become now a great deal more so.

These are the most frequent symptoms which attend an ulcerated can-

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cer; but the appearances of such sores are so various, that it is almost impossible in any description to comprehend every one. When two, three, or more, however, of those enumerated, concur together in the same ulcer, we may be always pretty certain of its being of the cancerous kind.

Although the exciting cause of cancers might be blows, many of the most eminent of the faculty think that they originate in a general disorder of the system; and they are borne out in this idea, by the fact, that many persons are again attacked with the disease after the local ulcer is extirpated. But, however, extirpation has, in numerous instances, removed the disease, particularly if it be performed in time: for it admits of little doubt, if the whole system become polluted with the cancerous virus, that, after excision, the disease will again recur.

Little or nothing can be expected from internal medicines, in the cure of cancers, although there can be no doubt, that whatever promotes the general health, and tranquillity of mind, must be advantageous in this complaint: and therefore ought not to be neglected.

External applications have been recommended and used in abundance; but although in some instances they have palliated the complaint, in others they have done no good whatever. The powder and extract of hemlock, about which so much has been said and written, have not succeeded, at least with British practitioners, in curing cancer; but they have been, notwithstanding, advantageously used as a palliative, in both scirrhous and open cancers, in abating the pain, and allaying the morbid irritability of the system.

The extract of hemlock may be given thus: Take of extract of hemlock two drachms, which make into thirty pills; three of which are to be taken going to bed, and two in the morning. These are to be continued for some time, increasing the dose according to circumstances. Some delicate habits cannot bear this medicine without its

affecting the head; but its usefulness will compensate such inconveniences. We should begin with very small doses in young persons.

The leaves of the deadly night-shade have been occasionally employed externally, for dispersing glandular indurations, and large tumours of this kind. They should be boiled in milk to form a decoction sufficiently strong, and with which the part affected must be frequently fomented.

When the pains are very excruciating, large doses of opium, or laudanum, are sometimes given, as the only means of procuring ease: but they do not appear to have any other good effect.

Where extirpation is not submitted to, or from the nature of the part, cannot be attempted, tar ointment with calomel, in the proportion of one drachm of the latter, to an ounce of the former, spread as a plaster on lint, and applied to the sore, has sometimes considerably alleviated the pain: and, if the part be extremely offensive, a poultice made of carrots will be of service.

No part of the body is more subject to cancers than the breasts of women; it is, therefore, of the utmost importance, that these should be guarded from blows, and violence of every kind, and also from every kind of painful pressure, from dress or otherwise. Cancers in these parts may arise at any period, although they seldom appear till about the time of the cessation of the menses. Tumours arising in the breast previous to this period, have been considered as merely scrofulous; and it is probably from their being so, that many tumours in the breast have been removed by mercurial frictions and other remedies. A cancer in the breast may, however, be distinguished when the tumour first appears, by its being in the form of a small hard knob in the glandular part, while the skin, at the same time, is free from inflammation. It frequently continues in this state for several months; by degrees it increases considerably in size, and a sharp pain is felt shooting to-

wards the arm-pits; the integuments over the tumor become at length discoloured, and at last, ulceration, or open cancer breaks out; violent hæmorrhages frequently ensue; the pain is more excruciating, and unless proper assistance be given, the patient is generally cut off in a few months from the breaking out of the cancer. In the early stage of this disease, a radical cure may be expected, if the patient will submit to a timely operation; but if the ulceration be deep and extended, and be also accompanied with disease of the surrounding parts, with swelling in the arm-pits, and other indications that the cancerous matter has affected the general health, very little is to be expected even from a surgical operation. As this operation is, however, one most distinctly within the province of the surgeon, and ought not to be attempted by any unskilful person, it cannot be necessary to enlarge upon this subject here.

It has been asserted that scrofulous ulcers frequently degenerate into cancers; and as scrofula is a disease much more frequent than cancer, such an opinion has not a little contributed to destroy the mental comfort and tranquillity of many persons, who have not, during their lives, experienced the slightest attack of actual cancer. But although we do not deny that scrofulous habits sometimes, particularly in the female, and after the cessation of the menses, become affected with cancers, yet the instances are numerous, in which no such cancerous affections ever take place. We know a scrofulous person whose life was made miserable for years, under such an impression, he having an affection of the nose, which he, as well as many other persons, thought cancerous, but which, although he is even now, occasionally, troubled with a slight ulceration of the nostrils, gives him comparatively, little trouble, and the fears from which, after an experience of thirty years, have entirely subsided. We mention this fact that our readers may not suffer unnecessary alarm relative to this complaint:

for perhaps, after all, one half of the diseases called cancer, may be, with more propriety, termed scrofula; and hence, perhaps, also the cures of cancer, by inadequate means, are said to be effected. See SCIRRHUS.

CANDLE, a well known cylindrical article, composed of a cotton or linen wick, loosely twisted, and covered with tallow, wax, or spermaceti: which, lighted at the end, is used to illuminate any dark place in the absence of the sun.

The tallow-candle, to be good, should be made of equal parts of mutton-suet and of bullock's tallow. Tallow-candles are of two kinds; the one dipped, the other moulded. Mould-candles burn longest and steadiest, but where a strong light is wanted, dipped candles are the best. There is also another species of candles called *rush-lights*, much used for burning during the night, where a mere light only is wanted, and which will continue slowly burning, for eight, ten, or more hours, without being snuffed: the wick in rush candles, are, as their name imports, composed principally of the medullary part of a certain kind of *rush*: lately, however, very small cotton wicks have been substituted for the rush, which are lighted much easier, are not liable to go out, and owing to the smallness of the wick, do not require snuffing.

Common candles are subject to a duty of one penny per pound; those made of wax, or spermaceti, to a duty of three pence halfpenny per pound. But small rush-lights, only once drawn through grease, and made by persons to be used in their own houses, are not chargeable with any duty. Tallow-chandlers are obliged to take out an annual licence, and are also subject to a variety of revenue regulations, which are frequently not a little troublesome.

All adulterated candles are, by various acts of Parliament, to be forfeited: and if any person is convicted of making candles privately, they are to be forfeited, together with the utensils, and the person is besides subject to a penalty.

Various experiments have been made relative to the time of the burning of candles, and also relative to their composition, but we do not believe that, upon the whole, for domestic and economical purposes, except where gas is used, that any other article, not excepting even oil, will be found so generally useful and convenient as a good tallow-candle; we do not think that even gas, for private apartments, unless when under discreet management, will be likely, for some time, if ever, wholly to supersede their use.

A patent was some time since obtained for making candles with hollow cylindrical wicks; they have not succeeded to any extent: but it is now well known, that the flame of two candles joined, give a much stronger light than both of them separate.

CANDLE-BERRY MYRTLE, or *myrica*, a genus of plants containing nine species, of which the following are chiefly cultivated.

The *myrica gale*, sweet gale or gaule, called in some provinces of England gold, sweet willow, Dutch myrtle, common candle-berry myrtle, is found wild in our own marshes, or rather bogs; rises with many shrubby stalks, two feet high and upwards, dividing into several slender branches, covered with a dirty bark, sprinkled with white dots. The leaves a yellowish green, and emitting a strong and fragrant odour when bruised; fruit a coriaceous berry. It is said that the leaves of this plant was formerly used instead of hops, in malt-liquors, and that they imparted an intoxicating quality to them: and that they are still applied to the same use in the Hebrides, and some of the Highlands of Scotland. It is said, also, that the leaves placed among woollen cloths, will preserve them from moths.

The *cerifera*, or American candle-berry myrtle, with small flowers of a whitish colour, and mean to the eye. Its leaves resemble myrtle-leaves, and like them, when rubbed in the hand, emit a most refreshing and delightful fragrance; the branches of the old plants

shed their leaves in Autumn; but the young plants, raised from seed, retain them through the greatest part of the winter, and appear like evergreens.

It is from the leaves of this plant, that the Carolinians, and other inhabitants of America, collect a wax, of which they very generally make candles. It is obtained thus: In November, or December, the wild berries are gathered by persons who make it their business so to do. The trees are cut down, the berries put into porridge-pots, and afterwards boiled in water till the wax floats; this is skimmed off into another vessel, and the skimming is continued as long as any wax rises to the surface. When cold, it is of a dirty green colour, and of the consistence of wax, or rather of hard mutton-suet: It is purified by another melting. It is occasionally to be obtained in England under the name of *myrtle-wax*. The candles made from this wax burn for a long time, and produce a fragrant smell.

The *quercifolia*, or oak-leaved candleberry myrtle; it is shrubby, with slender stalks. This plant retains its leaves all the year, and flowers in June and July.

The two first species may be raised from seeds, the last by layers. The former requires a boggy, moist situation, or a cultivation in bog-earth: indeed, from experiments which we ourselves have made, the *myrica gale* of our bogs, will grow in no other soil. The layers of the *quercifolia* should be attempted towards the latter end of the summer, or in the autumn, the shoots being twined at a joint when laid down, and well watered. The two first are introduced into the midst of sheltered clumps and borders; and the last into collections of the green-house kind, when their leaves afford an exquisite fragrance.

CANDLEMAN, or **CANDLEMAS-DAY**, the feast of the purification of the Virgin Mary, being the second day of February. It is one of what are denominated the *half-quarter* days of the year. In some parts of England, particularly amongst agriculturists and

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farmers, the year, and leases sometimes, begin at Candlemas.

Candock. See white **WATER-LILY**.

CANDOUR, or *ingenuosus*, is a trait of moral character, which can scarcely be estimated too highly: although it is one with which prosing hypocrites and worldlings are constantly at war. He who is taught to suppress his thoughts is not very likely, if they should happen to be erroneous, to have them corrected: candour in expressing our sentiments upon all proper occasions, and without obtrusion, is not only commendable, but highly meritorious; he who studiously conceals his thoughts may become a perfect master of deceit, but his morals must suffer, by the process, considerable deterioration. The time is not yet arrived when it may be prudent to speak and to write all which we think, principally because our education teaches us, in numerous instances, to think very erroneously; yet, inasmuch as candour makes a part of the reparation, even of a wrong, as a principle of moral action it is invaluable. Our young readers, in particular, will not, however, infer from this, that they are, whenever they please, and upon all occasions, to obtrude their sentiments and their opinions. Candour is a valuable quality, but it ought to be tempered with discretion. The cultivation of a candid state of mind is the best antidote for that demoralizing habit of falsehood and deceit, which too often admits no criterion but expedience, and no other influence than SELF.

CANDY, or **SUGAR CANDY**, is a preparation of sugar, made by dissolving and crystallizing it. It is of two kinds, white and brown. It is occasionally used for those complaints of the fauces and throat arising from what are commonly termed colds; it dissolves slowly in the mouth, and by such means increases the quantity of saliva, but in other respects its medical qualities are of a very low order.

CANDY-TUFT, or *Iberis*, a genus of plants containing eighteen species, all natives of the east, or of the south of Europe, except the *amara* and the

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nudicaulis, which are common to the corn fields of our own country. Of the exotics several are shrubs, but the greater number herbs. Some of them are pretty annual flowers, found in our gardens, and propagated by seeds; those which come up in the autumn and live through the winter are the strongest and best plants. The flowers are generally in umbels, or corymbs, and either purple or white.

CANELLA ALBA, or *Canella*, a West Indian tree, from ten to fifty feet in height, and highly aromatic; only one species.

Canella alba, the inner bark of the branches, erroneously sometimes called winter bark, is freed from the cuticle, dried in the shade, and brought to this country in long pieces, some rolled in quills; it is of a whitish yellow colour. When fresh broken it is aromatic, something like a mixture of cloves and cinnamon; the taste is slightly bitter, and extremely warm and pungent. This bark is stimulant and slightly tonic; it is added occasionally to bitters in some cases of dyspepsia and atonic gout; but it is employed chiefly on account of its flavour, and to correct the griping quality of resinous cathartics; hence it is an ingredient in the medicine formerly called *hiera picra*, and in wine of aloes. The dose of the powdered bark is from ten grains to half a drachm.

Canine appetite. See **HUNGER INSATIABLE**.

Canine madness. See **BITE of a MAD DOG**.

CANKER, a disease in trees, consisting of an erosion of the bark and wood, produced often by poverty of soil; and it is invariably connected with old age. The cause seems to be an excess of alkaline and earthy matter in the descending sap.

The common modes of attempting to cure the canker are by cutting the edges of the bark, binding new bark upon it, or laying on a plaster of earth; or the diseased part is carefully cut out, and a mixture of white lead and boiled oil, made into a thick kind of paint, with the addition of corrosive sublimate, is

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laid over the wound; but these methods, although they have been much extolled, probably do very little in producing a regeneration of the parts. Perhaps the application of a weak acid to the canker might be of use; or where the tree is of great value it may be watered occasionally with a very diluted acid.

It sometimes happens on grafting apples on old and worn out stocks, that the canker will attack the young grafts after the second or third year of their growth, so that the tree, although bearing fruit, will not flourish in its wood: for this we do not believe there is any remedy, and would caution the reader from grafting at all upon old and decrepid trees, as the grafts will generally partake of the diseases of the stock.

CANKER, an obstinate, and often incurable disease which attacks the horse's foot. It more frequently happens to draught-horses, than to the saddle or blood-horse, and to the hind than to the fore feet. It generally appears in the cleft of the frog, which discharges a matter of a very offensive smell, thence it gradually spreads to the other parts of the foot, and, if not checked, ultimately affects even the tendons, ligaments, and bones. By an early attention to this disease its cure may be generally effected without much difficulty, merely by removing the horny matter, which may be detached from the sensitive parts, and washing the diseased surface twice a day with a strong solution of sulphate of copper; when, however, the disease has made considerable progress, it will be first necessary to cut away completely all the horny matter; and this must be done freely in order to come at the diseased surface. Some persons will even remove the whole of the bottom of the foot, or *draw the sole*, as it is termed: and where the disease is inveterate, it is, perhaps, the most effectual method; and indeed is indispensable.

The fungous matter arising from the cankered surface must be freely cut away, and when the bleeding which follows has ceased, some mild caustic must be applied: such as blue vitriol, alum and white lead, of each equal

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parts, powdered fine, and sprinkled on the sore; afterwards, a firm and regular pressure on the whole of its surface must be applied, by means of tow and narrow plates of thin iron placed across each other, and having their ends under the shoe. Others give the following, as a real specific for canker: take of tar and sulphuric acid equal parts; mix them together: or take of powdered verdegris one ounce and a half, burnt alum and red lead of each half an ounce, of treacle four ounces, nitrous acid half a drachm; boil the whole to a proper consistence; and, when cold, add the nitrous acid. The canker ought to be dressed every day. In some inveterate cases the strongest caustics may be employed with advantage: such as the sulphuric and nitric acid undiluted. They, however, must be applied carefully. Butter of antimony is also useful for the same purpose. Powdered sublimate, red precipitate, and burnt alum, have also been recommended. When the cankerly appearance and smell have been corrected, milder dressings are proper; such as, two ounces of compound tincture of Benjamin mixed with one scruple of sublimate in fine powder, or four ounces of tar mixed with two drachms of sulphuric acid.

Oxen and sheep are liable to a disease similar to the canker, which sometimes appears between the claws of the divided hoof; at others it exists in only one of the claws, and the disease terminates in the loss of the claw. If there be only a discharge, astringents may be applied; and if a fungus is formed, the opening is to be enlarged and the excrescence removed: a pledget of lint sprinkled with powdered blue vitriol and alum, must be applied exactly within the edges of the wound, and firmly bound on the part; this is to remain three days, and then, if no fungus appear, a pledget of lint may be applied.

CANKERWORM, a name given to various kinds of voracious insects in their worm state. When some of these are become flies, and are settled on trees, they may be destroyed in great num-

bers; but we know of no certain and effectual remedy for them. It is most probable that they are the food of many birds; and an observing agriculturist might possibly do more by encouraging the increase of such, their natural enemies, than by any other mode of destruction.

Cannel Coal. See **COAL**.

Canterbury Bells. See **BELL FLOWER**.

Cantharides. See **FLY, SPANISH**.

Caoutchouc. See **INDIA RUBBER**.

CAPACITY, in its usual acceptance, means the power of containing; when applied to the human mind it implies its whole structure: thus we speak of a good capacity, a moderate capacity, &c. Capacity is partly natural and partly acquired; the natural capacity in some persons is, unquestionably, better than in others; hence the ease with which a science is acquired by one person, and the difficulty with which it is acquired by another. But the natural capacity is by no means of so much importance as the *acquired* one. By a *proper education* the mind of a person not naturally capacious, may become considerably more comprehensive than another's whose natural capacity is good, but whose education has been neglected. A thorough conviction of this truth ought to, and we hope will, lead to important results in the science of education: for as the human mind can be moulded by education into a thousand shapes, and its capacity enlarged and improved, the science of *morals* may acquire a certainty not hitherto attained, and to which it should be the object of the moralist, the legislator, and the political economist to aspire. Nor, if the united efforts of the wise and intelligent in a nation were directed to this end, do we think this moral certainty so distant in the progress of education as most believe. Away then with the idle excuse of those who tell us that they have no capacity for this or that pursuit: capacity may be produced by application and attention; and those pursuits which enlarge

the mind and ennoble human nature are the best. See **EDUCATION**.

CAPELET, a kind of corn which sometimes arises on the point of a horse's elbow. When it is inflamed and tender it should be bathed frequently with a lotion, composed of one ounce of goulard extract in a quart of water. If it feel soft, and contain a fluid, it should be opened, and afterwards dressed for a few days with a solution of blue vitriol. When it is of a firm consistence, it should be dissected out, taking care to preserve the skin. When it is not inconvenient to the animal it is best to let it alone.

CAPER, or **CAPPARIS**, a genus of plants containing thirty species, scattered in warm climates over the globe. The buds, or unexpanded flowers, are in common use as a pickle, of which the best, perhaps, that can be said of them is, that they are the least harmless of those articles which our good housewives are pleased to treat us with under the name of pickles.

Capivi. See **BALSAM**.

CAPON, a young cock purposely castrated as soon as he is large enough for the operation; the best time for which is said to be, when he is about three or four months old. This is one of those refinements in luxury which might very well be dispensed with; as a young male fowl taken from the barn door is more wholesome food than a capon, although *crammed* even to disease with feeding, and weighing, as it sometimes does, seven or eight pounds.

Capontail Grass. See **FESCUE**.

CAPPED-HOCK, a hard swelling on the point of the horse's hock, produced by a blow, or, sometimes, from other causes. It only requires to be bathed with the goulard lotion, mentioned under *Capelet*. As no inconvenience arises from such a swelling, if the lotion fail, it is better to leave it to nature.

CAPSICUM, *capsicum*, Cayenne, or Bird-pepper, a genus of plants containing four species, namely, the *annuum*, the *baccatum*, the *frutescens*, and the *sinense*. They are natives of South

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America and India. The fruit, or berry, of all these varies much in shape and size: the colour is usually red, or approaches to red, and, in conjunction with the flowers, which are commonly white, produces an elegant variety with the dark green leaves of the plant, when properly disposed among other plants. They are usually raised from seeds, planted in a hot-bed, and, afterwards, as the season advances, transplanted into pots; and, during the day at least, exposed to the open air.

The CAYENNE PEPPER, so well known as a condiment, is prepared from some of these in the West Indies, probably from the *Capsicum baccatum*.

Cayenne pepper is generally mixed with common salt, the least injurious of the ingredients which it too often contains. True cayenne pepper is of a light reddish hue, inclining to orange or yellow, and somewhat powdery; after being mixed with salt it loses its powdery quality: in all probability most of the cayenne pepper which finds its way to our domestic tables, is not more than half of its bulk the true article; its extreme pungency contributing to cover the fraud.

Cayenne pepper, or, as it is more properly called, CAPSICUM, has been lately introduced into medical practice as a powerful stimulant; and as such it is given in atonic gout, dyspepsia, dropsy, and in palsy. It has also been found useful in lethargic affections, in putrid sore throat, and in malignant scarlatina, given both internally and used as a gargle. Cataplasms of capsicum operate as powerful rubefacients without blistering the skin; and are used in the West Indies to relieve the stupor and delirium commonly attendant on tropical fevers. The diluted juice of the fruit is said to be a sovereign remedy in ophthalmia from relaxation.

It may be given in the form of pills, in doses from six grains to ten, or a *tincture* may be made from it thus: take of genuine cayenne pepper, or capsicum berries dried and bruised, half an ounce; of proof spirit one pint; macerate for fourteen days and filter. The dose of

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this tincture is from half a fluidrachm to one fluidrachm taken in a glass of water. A mixture of six fluidrachms of this tincture with half a pint of water makes an excellent capsicum gargle. Or a gargle may be made thus: take one drachm of cayenne pepper; one scruple of common salt; knead them into a paste, and add to it six fluid-ounces of boiling water; to the solution strained, when cold, add four fluidrachms of vinegar. Or a simple infusion of one grain of the pepper to one fluidounce of boiling water will answer perhaps equally well.

We have been somewhat minute in our detail of the virtues and doses of this medicine, because we think it is an important one, particularly to those who have not been accustomed to it as a condiment: for where even the strongest stimulants are used as almost daily food, their powers as medicines are of little value.

Cayenne pepper is, also, latterly much used for the diseases of cattle, arising from loss of appetite, and where the warm aromatic seeds have been commonly recommended, the use of which it promises, in many instances, to supersede. It is given to cattle in doses of from half an ounce to an ounce, joined with ginger, long pepper, and other stimulants. It is also occasionally given to horses as a cordial stimulant in indigestion, but in much smaller doses. In giving this medicine, great care ought to be taken to obtain it genuine: for on this will its success principally depend.

CAPSULAR LIGAMENT, in anatomy, a ligament which surrounds every moveable joint, or articulation, and contains the synovia like a bag.

CAPSULE, in botany a membranous hollow pericarp, opening in some determinate manner, or differently in different plants. Instances of capsules may be observed in the tulip, crown imperial, iris, poppy, &c. &c.

CARAT, a weight of four grains; it is also a manner of expressing the fineness of gold; an ounce being divided into twenty four carats. If or

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the mingled mass, two or three, or four parts out of twenty-four be base metal, the whole is said to be twenty-two, twenty-one, or twenty carats fine.

CARAWAY, or *Carum*, a genus of plants containing two species, one the *Carum carui*, common to our own meadows, affording the common caraway of the shops. The other *carum simplex*, a native of Siberia.

The common caraway, is an indigenous biennial plant, growing wild in meadows and pastures, but cultivated in various parts of England for its seed. The leaves have very much the appearance of carrot leaves; the flowers expand in May and June, and the seeds ripen in August. Caraway seeds brought from abroad, are smaller, and less esteemed, than those raised in England. This plant furnishes a wholesome and agreeable food to goats, swine, and sheep, but is refused by cows and horses. The young roots are said to be more pleasant than parsnips.

Caraway seeds are carminative and stomachic. They are used in flatulent, colic, and hysteria, and to give warmth to purgatives, and other active remedies; but they are so commonly used in biscuits, and other food, as to be scarcely considered a medicine. A water of caraway, a spirit of caraway, and an essential oil are kept in the shops. The essential oil is the most commodious. From one drop to ten on a lump of sugar, may be taken in flatulencies, and other disorders of the stomach, arising from indigestion.

CARBON, or pure coal, the base of carbonic acid, is a term used to denote the pure, or essential part of charcoal. The purest form in which this elementary substance exists in nature, is in the diamond; another form of carbon is *charcoal*, the purest variety of which is *lamp-black*. When lamp-black has been heated red hot, in a close vessel, it may be considered as very pure carbon. See **CHARCOAL**, and also the next article.

CARBONIC ACID, or **FIXED AIR**, may be obtained by a variety of processes: by burning carbon, either

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pure charcoal, or the diamond, in oxygen gas; it is also produced in great quantity in the vinous fermentation, both of wine itself, and of cider, perry, and every kind of malt liquor.

As all common combustibles, such as coal, wood, oil, wax, tallow, &c. contain carbon as one of their component parts, so the combustion of these bodies is always attended by the production of carbonic acid. It is also produced by the respiration of animals; hence it is detected often in considerable proportion, in crowded and illuminated rooms, which are ill ventilated, and occasions difficulty of breathing, giddiness, and faintness. It is also found in the atmosphere, forming commonly about one hundredth part of it. Carbonic acid is, therefore, a most abundant natural product; it is composed of about five parts of carbon, and fifteen of oxygen. The best mode of procuring it for experiment, is to pour diluted muriatic acid upon pounded marble, (*carbonate of lime*.) It may be collected over water, but must be preserved in vessels with glass stoppers, since water at a common temperature and pressure, takes up its own volume; under a pressure of the weight of two atmospheres, it absorbs twice its volume, and so on. The water by this process becomes brisk and tart, and reddens delicate vegetable blues. It is this quality of being absorbed by water, by which carbonic acid imparts a liveliness to all fermented liquors, to soda water, to spruce beer, &c. The effervescent quality of many mineral waters, is referable also to this gas, and they are often imitated, by condensing carbonic acid into water, by a condensing pump, or by a Nooth's apparatus. The presence of carbonic acid is instantly detected by lime water, which it renders turbid, and causes a deposit of white matter, which is *carbonate of lime*. The addition of water, saturated with carbonic acid to lime water, also occasions a milkiness from the same cause. When either the sulphuric, nitric, muriatic, acetic, or other powerful acids are poured upon common potash, lime-stone, &c. it is this acid which

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is disengaged, and produces the froth. It also exists in large quantities in yeast.

Carbonic acid is unrespirable, and it extinguishes flame. Its weight may be shown, by placing a lighted taper at the bottom of a tall glass jar, and then pouring the gas out of a bottle into it, in the manner of a liquid; it descends and extinguishes the flame, and will remain a long time in the lower part of the vessel. Hence in wells, and in some caverns, carbonic acid frequently occupies the lower parts, while the upper parts are free from it. The miners call it *choak damp*.

Carbonic acid unites with a variety of natural bodies, and forms various compounds with them, many of which are useful both in medicine and the arts: such as *carbonate of ammonia*, *carbonate of potash*, *carbonate of soda*, *carbonate of magnesia*, &c. Many carbonates also exist in nature, such as carbonate of lime, (consisting of marbles, chalk, and lime-stones,) carbonate of barytes, &c.

Carbonic acid cannot be given alone as a medicine; but, for this purpose, it is either combined with simple water; or with carbonate of potash, or carbonate of soda, dissolved in water, and saturated very strongly with the acid, by Nouth's apparatus. These waters are now prepared by individuals, in the large way, who have a peculiar apparatus for the purpose. In this state it is esteemed cooling, and antiseptic; it is given also thus combined in calculous affections, dyspepsia, and gout. See ACIDULOUS WATERS, AMMONIA, LEMON JUICE, LIME, MAGNESIA, POTASH, and SODA.

For the treatment of accidents arising from the inhalation of this gas, see CHARCOAL.

CARBUNCLE, or **ANTHRAX**, a hard and circumscribed tubercle like a boil, which sometimes forms on the cheek, neck, or back, and in a few days becomes highly gangrenous. It then discharges a very fetid sanies from under a black core, which, like a burning coal, continues destroying the surrounding parts. It is supposed to arise from a peculiar miasma, and is most common in warm climates.

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At its commencement, this complaint has much the appearance of a common boil, but its malignity is soon apparent. By the exertions of skill, this terrible disease is sometimes cured, but the state of the body is such as must always render the event highly to be feared. No person who is not well acquainted with medicine, should attempt its cure. But assiduity in administering proper cordials and nourishment, will be required of those friends and others, who surround the patient, and whose attention and kindness at such a time cannot be too strongly insisted upon.

CARBURETTED HYDROGEN, the name of that gas, or mixture of gases, which is now obtained chiefly from coal, and with which the streets of the metropolis, and other towns in England are so brilliantly illuminated.

Carbon and hydrogen combine in two proportions, and form gaseous compounds; one consisting of equal parts of carbon and hydrogen, and the other of one part carbon, and two parts hydrogen. There are several processes by which they may be obtained. The last variety of carburetted hydrogen is often generated in stagnant ponds, and may frequently be seen floating in bubbles on the surface of the water in a summer's day. Another kind of carburetted hydrogen, is called *olefiant gas*: it is a carburetted hydrogen mixed with chlorine.

These varieties of carburetted hydrogen, are abundantly produced during the destructive distillation of common pit-coal; and the gas thus obtained, is employed for the purpose of illumination, as an economical substitute for tallow, oil, &c. This process is carried on upon a very extensive scale in London. The coal is placed in cast iron cylinders, or retorts, which are ranged in furnaces to keep them at a red heat, and all the volatile products are conveyed by a common tube, into a condensing vessel, kept cold by immersion in water; and in which the water, tar, ammoniacal, and other condensable vapours are retained; the gaseous products consist principally of a mixture of carburetted and bicarburetted hydrogen, sulphu-

CARBURETTED HYDROGEN

retted hydrogen, and carbonic oxide, and acid; these are passed through a mixture of quick lime and water, in vessels called purifiers, by which the sulphuretted hydrogen, and carbonic gases, are absorbed, and the carburetted hydrogen gases transmitted sufficiently pure for use into gasmeters, whence the pipes issue for the supply of streets, houses, &c. The coke remaining in the retorts is of a very good quality.

The best kind of coal for distillation is that which contains most bitumen, and least sulphur. The chaldron should yield about 12,000 cubical feet of purified gas, of which one Argand's burner, equal to six wax candles, may be considered as consuming from four to five cubical feet per hour.

A chaldron of coals worth about three pounds sterling, yields commonly by distillation, the following products: $1\frac{1}{2}$ chaldron of coke, worth 30s; 24 gallons of tar and ammoniacal liquor, worth 6s; 12,000 cubic feet of gas, worth at 15s per 1000 cubic feet 9l.—Total £11. 3s. 6d.

These products are taken at their lowest value, but they afford ample grounds for showing the advantage of gas illumination; not merely for public purposes, but also in private establishments. It has been determined, that where more than fifty lights are required, a coal gas apparatus will be found profitable.

Messrs. J. and P. Taylor have lately constructed an apparatus, for the conversion of oil into gas. It consists of a furnace, with a contorted iron tube passing through it, into which, red hot, the oil is suffered to drop: it is decomposed, and converted almost entirely into charcoal, which is deposited in the tube, and into bicarburetted hydrogen, of which from two to three cubic feet are equivalent to five or six of coal gas for the production of light.

The commonest whale oil, or even pilchard dregs, quite unfit for burning in the usual way, afford abundance of excellent gas, requiring no other purification than passing through a refri-

gerator, to free it from a quantity of empyreumatic vapour.

The fitness of the gas obtained from coal for the purpose of illumination, is principally dependent upon the quantity of bicarburetted hydrogen, or olefiant gas which it contains; and as olefiant gas is heavier than common carburetted hydrogen, so the fitness of the purified mixed gas for illumination, will be directly as its specific gravity.

Experiments have shown that purified coal gas seldom contains more than 10 per cent. of bicarburetted hydrogen, while oil gas is almost completely composed of it: hence its superiority for burning, and the relatively small quantity consumed.

An account of the apparatus for the production of coal gas, and of its construction and expense, will be found in *Accum's TREATISE ON GAS LIGHTS*.

For mere experiment, this gas may be obtained by simply filling the bowl of a common tobacco-pipe with small coal, then closing the top of the bowl with a coating of stiff clay, and placing it in a fire: the gas will very soon escape from the end of the pipe, and if a candle be applied to it, it immediately takes fire, and burns as long as any gas is discharged from the coal.

All the various kinds of carburetted hydrogen are lighter than common air, so that whenever they are poured into it they ascend.

The second variety of carburetted hydrogen, or light hydro-carburetted, is contained abundantly in coal strata, from fissures, in which it is sometimes evolved in large quantities, forming, what is called in the north of England by the miners, a *blower*. When this gas has accumulated in any part of the gallery, or chamber of a mine, so as to be mixed in certain proportions with common air, the presence of a lighted candle or lamp causes it to explode, and to destroy, injure, or burn whatever is exposed to its violence. The miners are either immediately killed by the explosion, and blown with the hor-

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aces and machinery through the shaft into the air; the mine becoming as it were, an enormous piece of artillery from which they are projected, or they are gradually suffocated, and undergo a more painful death from the carbonic acid and nitrogen, (azotic gas) remaining in the mine after the explosion of the *fire-damp*; or what, though it appears the mildest, is, perhaps, the most severe fate, they are burned and maimed, and often rendered incapable of labour, and of healthy enjoyment for life.

The serious and calamitous accidents which have from time to time taken place in coal mines, have prompted scientific persons to obviate the danger of working in them where carburetted hydrogen is present. A *steel mill*, which gives out sparks, by which light enough is produced for the miners to see their work, has been occasionally used; but what is now called the **SAFETY LAMP**, invented by Sir HUMPHRY DAVY, is, beyond a doubt, the most useful instrument for the purpose now known; and it is, we understand, very generally employed in coal mines exposed to danger from the accumulation of this gas. See **LAMP**. Care, however, is required even in using this: and, indeed, unless care and prudence be adopted in such situations, generally, explosions will still occur.

This gas, it ought to be remembered, when in a pure state, will extinguish a candle, or any other burning body, if immersed in it; and, of course, if inhaled in any quantity, or if any animal be placed in it, it produces death; but if mixed with oxygen in certain proportions, or with atmospheric air in certain proportions, and they come in contact with flame, or an actively burning body, an explosion is the result; the mischief arising from which will depend upon the volume of, and resistance opposed to, the united gases. Too much caution cannot, therefore, be adopted in handling such combustible bodies, or the gas pipes now so common in our streets and houses. Although under ordinary circumstances it is not probable that a

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room commonly lighted with gas might, by neglect of stopping the cock, become so charged with common carburetted hydrogen as to be dangerous; yet it should be remembered that such a circumstance is very possible, and a lighted candle carried into such room might produce the same dreadful effects as are occasionally experienced in coal-mines. See **HYDROGEN** and **OXYGEN**.

CARDAMINE, *Cardamine*, or common Lady's Smock, or Cuckoo-flower, a genus of plants of, which there are twenty-two species in different parts of the globe; five are found in our own country. The *pratensis*, which is found in moist meadows, flowers in April, has a place in the materia medica; the flowers are said to be diuretic and antispasmodic; and they sometimes produce diaphoresis, but have otherwise little sensible operation. Notwithstanding this medicine has been recommended by respectable physicians, it is little used. The dose of the dried flowers powdered is from one drachm to three drachms, given twice or thrice a day.

CARDAMOM, *Cardamomum*, or *Elettaria*, the seeds of a plant growing on the mountains about Cochín and Calicut. Three species of the plant are known, but the seeds distinguished by the name of *Lesser Cardamoms* are those used in medicine; they are brought to this country in the capsules, which are small, triangular, and of a pale clear straw colour; the seeds are of a dull brown, and emit, when bruised, a pungent, volatile, and not unpleasant smell. They are carminative and stomachic; less stimulating than pepper, and are, therefore, used united with rhubarb and magnesia in the flatulent colic of children; and as a grateful addition in dyspepsia and gouty affections of the stomach; they are often combined to give warmth, and correct the griping of other medicines. The dose of the seeds, in powder, is from six grains to one scruple. A simple and compound *tincture* of cardamoms are also kept in the shops, which are useful stomachic medicines. See **GRAINS** of **PARADISE**.

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Cardialgia. See HEART BURN.

CARDINAL-FLOWER, or *Lobelia*, a genus of plants containing fifty species, chiefly natives of the Cape, the East and West Indies, a few of Europe, and one, the *dortmanna*, called also *water gladiole*, with beautiful pale blue flowers, common to our own lakes. The *syphilitica*, another species, is a native of Virginia, with an erect stem and blue flowers. The root of this plant has been used in medicine: in taste it resembles tobacco, and is apt to excite vomiting. But, although it is said that the North American Indians considered it as a specific in the disease from which it derives its name; yet it does not appear that European practice has confirmed this account.

CARDS, are fifty-two quadrangular pieces of white paste-board, about three inches long and two inches wide, having certain figures painted upon them, with which very great numbers of grown persons in society are pleased to be amused; and at the same time squander their own, and occasionally obtain their friend's money. But above all, by such means they endeavour to annihilate all thought, except that which is directed to these painted baubles, in order, as it is commonly and tritely expressed, to pass the time away. **THESE ARE CARDS AND THEIR PURPOSES**: to reason upon such a subject would, we fear, be vain, and we, therefore, here can only enter our protest against such an employment, or rather annihilation, of the intellectual faculties of man.

CARIES, in surgery, a rottenness, or ulceration of the bones. The removal, or cure of carious bones, is more immediately within the province of the surgeon, but it sometimes happens that in scrofula the bones become carious, and their removal from the sound parts may be conducted by the patient himself, or by a tender and skilful attendant. In such cases, it is often many weeks before a piece of bone, presenting itself in the orifice of the wound, will readily come away, or can be removed without incisions. In this case, it is better to wait upon nature than to be

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in haste: emollient poultices and soft dressings are the best to promote its discharge.

CARIES of the bones in Horses, is often an attendant on a fistula of the withers, and on poll-evil. Sometimes, the under jaw becomes carious next the tusk, in consequence of the improper pressure of the bitt. The most effectual remedy for caries is to scrape off with a drawing knife, or other convenient instrument, the diseased part of the bone, and dress afterwards with compound tincture of myrrh, or compound tincture of benjamin.

CARLINE-THISTLE, or *Carlina*, a genus of plants containing twelve species, almost entirely natives of Barbary and the south of Europe, except the *vulgaris*, which is indigenous to our own pastures. The *acaulis*, a native of the south of Europe, the root of which is bitter, is said to possess diaphoretic and anthelmintic virtues; but it is scarcely known in medicine in this country.

CARMINATIVES are those medicines which, taken into the stomach, almost immediately allay the pain, and remove the flatulence of both the stomach and bowels.

CARMINE, a powder of a very beautiful red colour, used principally by miniature painters. It is obtained from the colouring matter of cochineal, combined with potash or alum. The secret of producing it is in very few hands. Possibly it may be also obtained from **LAC-LAKE**. See that article.

Carnation. See **PINK**.

CARNIVOROUS, an epithet generally applied to animals of every description, which subsist for the most part, or entirely, on animal food: it is, in a more limited sense, sometimes applied to those ferocious animals whose nature prompts them to obtain such food in the most cruel and barbarous manner: the lion, the tiger, and the wolf; and among birds, the eagle, the kite, and the hawk, are carnivorous animals.

It has been long disputed whether

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man be naturally carnivorous ; but, we think, there can be no doubt that he is naturally so ; habit and education have made him both graminivorous and carnivorous ; and we are, from a variety of considerations, obliged to conclude, that in a proper admixture of animal and vegetable food does his health, according to his present habits, manners, and constitution, essentially depend ; the vegetable portion, however, ought to be considerably predominant over the animal proportion.

That man may ultimately attain the desirable art of living without any animal food at all, we think very probable : indeed, a few individuals of singular resolution and abstinence now do so : but these, of course, are exceptions, not the rule. The destruction of animals for the gratification of our appetite is not at any time an agreeable idea to those possessing feeling, and delicacy of sentiment : least of all it is so when they are destroyed in **SPORT**.

CARP, or *Cyprinus*, a genus of fishes, having a small mouth without teeth ; the gill-membrane with three rays ; body smooth, generally whitish. The fishes of this tribe are chiefly inhabitants of fresh waters ; they afford a palatable and nourishing food ; feed on worms, insects, smaller fishes, leguminous seeds, and fat earth : some of them migrate, and most of them spawn about April or May. There are fifty-one species scattered through the waters of the globe. They are thus subdivided into sections : Bearded, nine species. Tail nearly even at the end, four species. Tail bifid, thirty-six species. The following are chiefly worthy of notice.

The *Carpio*, or Common Carp : three varieties ; one of which has half the body covered with very large scales, and the other half naked ; another altogether scaleless. It inhabits the slow and stagnant waters of Europe and Persia, and was introduced into England in the year 1514. It is about four feet long, grows fast, and is very long-lived ; feeds on herbs, fat earth, worms, and aquatic insects, and any soft substance ; is extremely fertile, and the prey of larger

fishes, aquatic birds, and frogs. Body above, blue-green ; the upper part of the sides, greenish yellow, and blackish ; beneath, whitish ; tail, yellow ; of the gall is made a green paint ; and of the sounds, or air-bladder, a fish glue, or isinglass. From the spawn of this fish caviare is made for the Jews, since they hold the sturgeon, from which it is commonly prepared, in abhorrence. It is said to have attained, in some instances, the enormous weight of two hundred pounds ; and by gradual exposure to air, instead of water, to be able to live with only occasional submersions in water, in air alone for weeks, or months, or, perhaps, years.

Carp are docile, and have become occasionally so tame as to come to the shore, upon being called to the sound of a bell to take their food. They are, however, extremely cunning, and not easily caught, except in spawning time. The best season for catching carp and barbel is July, and the most proper time, day-break. Neither lead nor shot should be used in the lines ; which ought to be proportionate to the rods, and be made of Indian twist, or strong pearl-coloured silk, armed at the bottom links with sea-grass, Turkey-grass, or strong silk-worm gut, perfectly free from knots or frettings. When the spot for angling is fixed upon, throw in, on the night preceding, a considerable quantity of paste, made of bread and bran, or mixed with lob worms cut in pieces, or a mixture of blood and grains may be thrown in, which should be repeated three successive nights. The bait for the first rod should be a well-scoured lob-worm. An additional ground-bait should be thrown in at the same place for the three preceding nights. The worm being dropped as exactly as possible on the ground-bait just thrown in, the first rod is to be laid on the ground, and the second baited. The bait for this rod must be four red worms. The bait for the third rod should be baited with the following paste : crumb of white bread, one day old, soaked in warm milk till sufficiently soft to be of the necessary consistence ; the milk is then to be

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pressed out, and honey added sufficient to give it a sweet flavour ; a little dried and powdered saffron, to give an orange-colour, and a few drops of oil of rhodium should be also added. It is then fit for use. The floats for each rod must be of the single plugged kind, and the fish must be "played deep:" without this caution the fish will "break," and escape.

The *Barbus*, or Common Barbel. See BARBEL.

The *Gobio*, or Gudgeon, which inhabits gentle streams and lakes in northern Europe ; it is about eight inches long ; feeds on herbs, worms, insects, and the fry of other fishes ; varies its colours by age, the different waters it inhabits, and the different food it eats ; the flesh white and very grateful.

The *Tinca*, or Tench, a variety of which has a golden body and transparent fins. Inhabits almost every where in stagnant waters ; grows quickly, and reaches from four to eight pounds weight ; very tenacious of life, and will live all the winter under the ice ; is very stupid, and may be easily caught : flesh white, soft, and well tasted.

The *Carassius*, or Crucian, inhabits Europe, Siberia, and the Caspian sea ; seldom exceeds a pound weight ; flesh good.

The *Auratus*, or Gold-fish. This most beautiful fish is an inhabitant of the rivers of China and Japan, and is naturalized almost every where, on account of its elegance and vivacity : the colours vary greatly, but are chiefly of splendid gold.

The *Baphthalmus*, or Telescope-carp, is scarlet, all the fins white, eyes protuberant. Inhabits China, and in size and beauty equal to the last.

The *Phloxinus*, or Minnow, inhabits small gravelly streams in Europe, hardly three inches long.

The *Lenciscus* or Dace, inhabits deep still waters of England, France, southern Germany, Italy, and Siberia ; from six inches to one foot and a half long : flesh white and good. Another variety, found in the Mersey ; seven inches and a half long

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The *Cephalus*, or Chub, inhabits fresh waters of Europe ; about five pounds weight ; flesh coarse and bony.

The *Rutilus*, or Roach. Inhabits deep still waters ; found in England ; seldom weighs more than one pound and a half : flesh white and good.

The *Orpus*, or Rud, or Finscale ; the gill cover spotted with red. Found in England, Russia, and Germany.

The *Erythrophthalmus*, or Red-eye. Inhabits the fresh waters of northern Europe and the Caspian sea ; about twelve inches long ; flesh good in summer.

The *Alburnus*, or Bleak. See BLEAK.

The *Brama*, or Bream. See BREAM.

CARPET, a covering for the floors of dwelling-houses, &c. manufactured of wool or other materials, and worked with the needle, or in a loom. Carpets are manufactured in England, of various kinds and qualities ; and form one of the most comfortable luxuries of modern times. We doubt, however, very much the utility of warm, and carpeted rooms for general health ; and suspect that many of our ailments and diseases originate from such sources. To the invalid, however, such conveniences are invaluable.

CARRIAGE, a vehicle employed in conveying persons, goods, merchandize, &c. from one place to another, and is usually constructed with two or with four wheels.

Close carriages for the conveying of persons, are always more or less unwholesome, and ought never to be entered, except in cases of urgent necessity, or by the invalid, to whom indeed, they afford a mode of loco-motion, not otherwise attainable without danger to health. But, that persons in perfect health, and upon almost all occasions, can voluntarily place themselves in a close box of confined air, because it is denominated a *carriage*, is not a little extraordinary : stage-coaches, where six persons are confined for many hours, are in this respect peculiarly improper. Nothing but the severity of the weather, or wet, should prompt any person to ride within such vehicles. Nor are the private carriages of the opulent free

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from an improper atmosphere. When will the great and wealthy learn, that such departures from nature never insure them health?

A variety of patents have been obtained, from time to time, for the improvement and safety of coaches: the last, and indeed we believe by far the best, is that by Mr. MATTHEWS, now known by the name of the *safety-coach*.

In this coach all the luggage is placed below, the outside passengers sit as in an open carriage in front; the covered carriage is behind; it is wider than most other carriages, and we are informed runs heavier; but of its superior safety there can be no doubt. See TRAVELLING.

Carriages are liable to various duties, depending upon their construction, number of wheels, &c.

Some attempts have been lately made to introduce the use of carriages without horses, to which we wish every success, both as it regards humanity to animals, and also because such carriages afford a wholesome exercise for the persons who use them. We are sorry, however, to say that no plan of a carriage of this kind has been hitherto adopted, which is without inconvenience. The first of the kind, which is called a *velocipede*, consists of two wheels, attached to a pole, one of which is placed before and the other behind. On the pole, between the two wheels, is fixed a kind of saddle on which the person using the vehicle occasionally sits; over the front wheel is a raised board to rest the arms: a kind of handle rising from the front is used as a guide. The person using this carriage, stands across the pole over the saddle, and uses his feet on the ground, something like a person skating. Expert persons have travelled in this way, fifty miles a day; and, for a short time, eight or nine miles an hour; but it is said that several cases of hernia have been caused by the exertions of those who use them.

The *Manivelociter* is another of these machines, worked by the hands alone; it is calculated for two persons, and

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consists of *three* wheels. The feet in this vehicle do not touch the ground; but the person sitting in front guides, the machine; and the person sitting behind, works it by a contrivance of levers. Two other machines with *three* wheels have been constructed, one is called a *Bivector* and the other a *Trivector*, simply because the one is worked by two persons and the other by three. In the trivector the men work together and sit as easy as in any other carriage; the muscular and bodily action is like that of rowing, but far more easy. This machine, worked by three men, went from London to Brighton in seven hours; they afterwards went thirteen miles farther, making a distance in one day, of sixty-seven miles. These last-named vehicles are the invention of Mr. BIRCH, of Great Queen Street, London, and although not perfect of their kind, yet promise, with still further improvement, to be of considerable utility.

CARROT, or *Daucus*, a genus of plants containing six species, all exotics and natives of the south of Europe, except the *daucus carota*, or common carrot, which is indigenous to our own pastures, and the root of which is much improved by culture in our gardens and fields.

Although there are many varieties of this plant, there seems to be only one that is proper for being cultivated in the field for the purpose of feeding cattle; this sort is usually called the orange carrot, in which the colour is much more dark than in the other varieties, and the substance of the root itself more saccharine and juicy; the root of this variety attains to nearly double the size of that of the pale yellow kind.

The soils best adapted for this root are those having considerable depth of fine mould, either of the friable, sandy, or vegetable, earthy kinds; but they might probably be cultivated to advantage on most sorts, except the stiff, clayey, and thin, gravelly, or chalky sorts. Black deep vegetable, and rich deep sandy soils, are, however, the best.

In preparing lands for this crop, re-

CARROT

peated and deep ploughing is particularly necessary : three ploughings are in general sufficient ; but more may be occasionally necessary. The first ploughing should be made ten, twelve, or fourteen inches deep, and, when the soil is dry, in October. The second should be performed in February, and the third and last, which need not be so deep, should be given in March ; and if well rotten farm-yard dung can be turned into the soil with the last ploughing, the crop will be much benefitted by it. In Suffolk, however, where carrot husbandry is practised to the greatest extent, it is the common method not to plough the land till the time of putting in the crop.

The cultivator of carrots should always be careful to save his own seed, from the best roots of the preceding year's growth, which should be set out some time in March, in an open piece of ground for the purpose. When the seed is sown, from its lightness, and its adhering so closely together, it is necessary to mix saw-dust, bran-ashes, dry earth, or dry sand, with it ; but the two first are the best, because they are nearly of the same weight as the seed. Some persons, however, merely separate the seeds, by passing them through a sieve, and sow them alone : the most common method is *broadcast*, which is found by experience to be the best. Five or six pounds of seed are the usual quantity for an acre : but when the drill plan by a machine is followed, two pounds to the acre are said to be fully sufficient. *

It will be necessary during the growth of the crop, to keep them from being too much crowded together, and as free as possible from weeds ; the weakest plants are, of course, to be removed either by a small hoe, or by the hand ; to facilitate this operation, it may be best performed when the carrots are sown in ridges, which can be commanded by two persons. Two hoeings are necessary : in the last the plants must be thinned out to proper distances, about twelve inches each apart, these being found productive of the best crops, and largest roots ;

a third hoeing is sometimes practised in June, according as the growth of the plants, or the weeds require.

The crop should be taken out of the ground in September, or October, when the tops begin to turn yellow, and to lose their freshness ; these points, however, should be nicely attended to : for if they remain too long in the ground, the tops will not be fit to be consumed by swine, or neat-cattle ; and if taken up too soon, the roots will not keep so well. After being taken up by the plough, or a fork, the roots should remain in the field two or three days, that they may become perfectly dry ; when fully so, the tops must be cut off and the roots packed up in heaps, with dry straw ; or when in small quantities, with dry sand in some dry close building. But they should not be kept in two large quantities together, as they are liable to be injured by heating.

This root is relished by all sorts of cattle ; store neat stock are found to thrive well upon it, and when given to milch-cows, the quantity of both milk and butter is said to be increased without any injury to their flavour. Sheep have also been fattened by this root, one acre being equal to two and a half of turnips ; hogs become readily fat by them, when prepared by boiling ; but the most general consumption of carrots has been in the feeding of working horses ; in which they have saved much corn, without the animals sustaining any inconvenience. The general daily allowance to a horse, is from forty to fifty pounds : when joined to cut chaff, and a little hay, they are found to keep the animals in proper condition for all the purposes of farming-labour. This sort of food is mostly begun to be given them towards Christmas, and continued till the end of April.

The roots of the carrot may be *dried*, and in this state are recommended as a substitute for hay, in unfavourable seasons. They may be also used ground, and treated in every respect the same as malt, for brewing beer.

The carrot forms a useful variety of

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food for man. It has also been employed on account of the great quantity of saccharine matter which it contains both for sugar and alcohol. It has not, however, saccharine matter enough to render it ever an article which can vie even with the beet-root, much more with the sugar-cane; but it may, under certain circumstances, be advantageous in distilleries, either alone or in conjunction with other vegetable saccharine matters.

The root of the garden carrot is emollient and antiseptic: and is successfully used when boiled and beaten to a pulp, as a poultice, to correct the discharge of foetid and ill-conditioned sores; and to allay the pain of cancerous and other spreading ulcers. The seeds are carminative and diuretic; and hence useful in flatulent cases; but they possess no efficacy in gravel, for which they have been extolled. The dose of the bruised seed is from one scruple to a drachm, or more.

The seeds of the wild variety, *daucus sylvestris*, have an aromatic odour, and a warm pungent taste; qualities depending on an essential oil, which may be separated by distillation with water: these seeds are, we believe, more powerful than those of the garden carrot.

CART, a land carriage with two wheels, drawn either by horses or oxen, for conveying heavy goods, &c.

Carts are beyond doubt the cheapest, and also the best kind of carriage for the *farmer*. In a flat country, they are preferable to any other; and even in a hilly district, no other carriage can be dragged up so easily; and means have been invented by which their safe descent may be facilitated and insured. By means also of a light frame, or what is called a *harvest-top*, which may be occasionally fixed upon them, carts are rendered fit for carrying a considerable quantity of corn, hay, straw, and other bulky, but light articles.

Carts may be worked either with one or two horses; double-horse carts are most advantageous, when much field labour is to be performed, and where the roads are so bad that a sin-

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gle horse could make no progress upon them. The practice, however, of putting three or four horses in a cart, (as is done in the neighbourhood of the metropolis) deserves reprehension; for when such carts are *empty*, they are considerably heavier than one horse can draw, in constant work; and seldom much more than a ton is drawn in such carts, even with three or four horses.

When oxen are used, it is better that they should be yoked only *in pairs*.

The late LORD SOMERVILLE, with his usual zeal for agricultural improvement, has, in *Communications to the Board of Agriculture*, vol. II. page 415, described a drag-cart for two oxen, by which they are able to draw a considerable weight, even in a hill country.

Irish cars have their advantages; but they do not carry such heavy weights as single-horse carts will convey.

Convinced that carts are best calculated for agricultural purposes, we may just observe, that where the country is level, the roads free from ruts, and the people rich, they indulge in expensive horses and teams of parade and show; but, in general, these teams are but little adapted for agricultural purposes, more especially for the corn or hay harvest, where expedition is so essential. Heavy waggons also are greatly to be objected to in hilly districts, as the wheels must be frequently locked, by which the roads are ploughed up, and essentially injured.

Cart-Horse. See **HORSE**.

CARTILAGE, is a white, elastic, glistening substance growing to bones, and commonly called gristle. The uses of cartilages are to lubricate the articulations of bones, and to connect some bones by an immoveable cohesion. Cartilages have a natural elasticity, the power of which is so great, that on being forced out of their situation they spontaneously return to it as soon as that force is removed.

CASCARILLA, the bark of a tree, the *croton cascarilla*, a native of the Bahama islands and Jamaica. It seldom

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exceeds twenty feet in height. From the tender branches, when broken, oozes out a thick balsamic liquor. Cascarilla bark is imported chiefly from Eleutheria, one of the Bahama islands. It consists of pieces about six or eight inches long, scarcely one-tenth of an inch thick, quilled and covered with a thin whitish covering or epidermis. It has a pleasant spicy odour, particularly if bruised or burnt, and a bitter, warm, aromatic taste. It is very inflammable, and is easily distinguished from all other barks, by emitting, when burnt and extinguished, a fragrant smell, resembling that of musk, but more agreeable.

It is a valuable carminative and tonic; and may be occasionally added to the peruvian bark with advantage, in the cure of intermittent fevers. It has been successfully employed in dyspepsia, asthma, and flatulent colic, in the latter stage of dysentery and diarrhoea, particularly when occurring after measles; and in the gangrenous thrush peculiar to children. The dose of the bark in powder is from twelve grains to half a drachm three or four times a day.

An *Infusion*, a *Tincture*, and an *Extract* of this bark are kept in the shops.

The *Infusion* is made by pouring half a pint of boiling water upon half an ounce of the bruised bark; macerating for two hours, and then straining. It should not, however, be used with any medicines having the following ingredients in them, viz. lime-water, infusion of galls, infusion of yellow Peruvian bark, solutions of nitrate of silver, acetate and super acetate of lead, sulphate of zinc, and sulphate of iron; all of which it either decomposes or precipitates. It is a light stimulant and tonic, and is advantageously given in looseness, and the gangrenous thrush of children. The dose is from one and a half to three fluidounces.

The *Tincture* is made with two ounces of the powdered bark and one pint of proof spirit, macerated for fourteen days, and then filtered. It is used with the same intentions as the bark. The dose is from half a fluidrachm to half a fluidounce.

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CASEHARDENING of Iron, is a superficial conversion of that metal into steel by combining it with vegetable or animal coal. See **STEEL**.

CASHEW-NUT TREE, or *Anacardium*, a genus having only one species, a native of India, entitled *occidentale*. It grows to the height of twenty feet, and bears a fruit about the size of an orange, filled with a pleasant acid juice, often employed in making punch. The nut of the plant grows at the apex of the fruit, the oil of which is an active caustic, and employed as such in its native country; but neither it nor any part of the fruit is used medicinally in this country.

CASSAVA, or *Jutropha manihot*, is a native American plant, every part of which, when raw, is a fatal poison. It is remarkable that this poisonous quality is destroyed by heat; hence the leaves are boiled and eaten as Europeans eat spinach; the root abounds with a milky juice which is boiled with meat, pepper, &c., into a wholesome soup; and what remains after expressing the juice is formed into cakes or meal, forming the principal food of the inhabitants of certain parts of South America. It is said that Tapioca is the true farina of the plant. See **TAPIOCA**.

CASSIA, a spicy bark, the production of the *Laurus cassia*, a species of bay, a native of the East Indies. See **BAY**.

CASSIA, in botany, a genus containing fifty-nine species, chiefly natives of India and South America. Of these the chief worth noticing are the following medical plants.

The *fistula*, *Cassia fistularis*, or purging cassia of the dispensaries, is a native of both the East and West Indies, and Egypt. It rises to the height of forty or fifty feet, with a large trunk much branched at the top. The fruit is a round, long, woody, dark brown or rather black pod, about one inch in diameter, and two feet in length; it is divided into numerous transverse cells, each containing one smooth, oval, yellowish shining seed, imbedded in a soft black pulp. The heaviest pods, in

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which the seeds do not rattle on being shaken, are the best, containing the greatest quantity of pulp, which is the part used ; it has a slight and somewhat sickly odour, and a sweet mucilaginous taste.

Cassia pulp is gently laxative ; but although it is adapted for children and delicate women, when taken in doses sufficiently for stronger habits it is apt to induce nausea, flatulence, and griping. The dose is from three drachms to an ounce or more. It is scarcely ever used alone, but in the well-known *Lenitive Electuary*, now called *Confection of Senna* ; and also as the principal ingredient in the *Confection of Cassia*. The dose of which last, as a gentle laxative, is from one drachm to an ounce. For the dose of the former see SENNA.

The *Cassia Senna* is the species which yields the Senna of commerce. It is an annual plant, a native of Upper Egypt. See SENNA.

CASTOR, or *Castoreum*, a peculiar substance obtained from the follicles of the BEAVER, as mentioned under that article. When the beaver is taken, the follicles are cut off entire and dried, either by exposure to the sun or smoke. The castor is at first fluid, but gradually becomes solid, viscid, and occasionally perfectly dry and pulverulent. The best comes from Russia, but of late years it has been very scarce, and all which is now found in the shops is the produce of Canada. The goodness of castor is determined by its sensible qualities. Russian castor is generally of a darker, harder, and more resinous fracture than the Canadian ; they are both of a reddish, or rather of a liver colour ; and the smell is strong and peculiar, the taste is bitter, sub-acid, and nauseous.

Castor is antispasmodic and emenagogue. It is given in low nervous fevers, hysteria, epilepsy, and spasmodic affections ; and it is supposed to be useful in menstrual suppressions, and in chlorosis. It may be given in powder from ten grains to one scruple for a dose, made into a bolus ; or in the

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form of tincture, which may be made thus ; Take of castor, powdered, two ounces ; rectified spirits two pints ; macerate for seven days. The dose is from twenty drops to two fluidrachms.

A *Compound Tincture of Castor* may be made thus : Take of castor in powder one ounce, assafoetida half an ounce, spirit of ammonia one pound ; digest for seven days and filter. This is a more active preparation than the former, and may be given in hysteria, cramp of the stomach, and flatulent colic, to the extent of two fluidrachms for a dose.

CASTOR OIL, an expressed oil obtained from the seeds of the *Ricinus communis*, an annual plant, a native of the West Indies, South America, and Africa. It is of a very quick growth, and sometimes attains to the height of sixteen feet : the leaves are very large. The capsule is a trilobular nut, covered with rough spines, which burst elastically to expel the seeds, which are generally three, of an oblong flat figure, and spotted exteriorly something like a dwarf kidney bean.

The oil, which is more frequently used than the seed, is obtained from them both by coction and expression. That obtained by cold expression is the best, if care be taken to let it remain afterwards long enough to become fine. What is usually found in the shops is imported from the West Indies in quart bottles ; there it is obtained by the agency of heat ; and it not unfrequently happens that such oil has both a burnt taste and smell, and a reddish colour. Cold-drawn castor oil obtained from the seed in England, is of a palish green colour, and considerably thicker than what is brought from abroad ; but the colour is not always a test of its goodness ; for it is sometimes adulterated with oil of almonds. Genuine castor oil is neither inodorous nor insipid, as some writers assert ; on the contrary it has a very peculiar smell which cannot be imitated ; and its taste is far from being agreeable, leaving a slight sensation of acrimony in the throat after it is swallowed.

The seeds are drastic cathartics, but

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are scarcely ever used in medicine. The oil is mildly purgative, operating very quickly, and with so little irritation as to be peculiarly fitted for a variety of complaints; as, in obstructions of the bowels, colic, calculous affections, piles, and after surgical operations in which the abdominal viscera are concerned. It is also an excellent purgative for infants even of the tenderest age; a tea-spoonful given a few hours after the birth is the best medicine to expel the *meconium*. It is also an excellent aperient for women in child-bed. The dose is usually half a fluidounce, (a table-spoonful) for an adult, either floated on a little water, and covered with a small quantity of ardent spirit; or diffused in a cup of coffee; or in water by means of mucilage of gum arabic, or mixed with sugar and the yolk of an egg. The addition of some aromatic tincture, such as cardamoms or cinnamon, is sometimes necessary to cause this oil to remain on the stomach. It is given occasionally in much larger doses, to the extent even of one fluid-ounce and a half.

CAT, or *Felis*, a genus of animals containing twenty-three species, most of which are savage and ferocious in their general temper and disposition. Inhabiting different parts of the world; the most ferocious infest Africa and the warm parts of Asia.

This tribe is temperate in its habits; easily climbs trees; is swift, and sees best by night; when falling from a height alights on the feet; suddenly springs on its prey; sucks the blood, and then devours it; waves the tail when in sight of prey; refuses vegetables except from necessity; females bring many young; teats eight. The following are the principal species.

The *Leo*, Lion;—the *Tigris*, Tiger;—the *Pardus*, Panther;—the *Uncia*, Ounce;—the *Leopardus*, Leopard;—the *Onca*, Brazilian Tiger;—the *Pardalis*, Mexican cat;—the *Chans*, Caspian Lynx;—the *Caracal*, Persian Lynx;—the *Lynx*, common Lynx;—and the *Felis Catus*, or Cat.

Fortunately for Great Britain, all

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these rapacious animals, except the last, are unknown to us but as objects of curiosity. The ravages frequently committed by the tiger in the East Indies are often of the most appalling kind. Instances have not been wanting of animals of this description kept for show, getting loose even in England; the attack on the horses of the Exeter mail coach by a lion, will be long remembered.

The Cat consists of the following varieties: wild cat; domestic cat; Angora cat; tortoise-shell cat; blue cat; red cat; Chinese cat; yellow cat, and Madagascar cat.

This species inhabits the woods of Europe and Asia; domesticated every where; when pleased, purrs, moving the tail; when irritated is very active, climbs trees, spits, emits a foetid odour; eyes shine at night; the pupil in the day-light forming a perpendicular line; walks with its claws drawn in; drinks sparingly; urine of the male corrosive; buries its excrements; makes a disagreeable noise in its amours; mews after and plays with its kittens, bringing them food; wags its tail when looking after prey; the lion of mice, birds, and the smaller quadrupeds; peaceful among its tribe; eats flesh and fishes; refuses hot and salted meats; washes behind its ears before a storm; back electric in the dark; when thrown up falls on its feet; gravid sixty-three days; brings from three to nine young, which are blind for nine days after birth; delights in the aroma of marum, cat's-mint, and valerian.

The domestic cat, if kept in its proper place, and fed sparingly, is a very useful animal; but if it be fed highly, and retained in the parlour, it becomes lazy, and a mere nuisance about the house. The possibility of such animals becoming afflicted with hydrophobia, should impress every one who values his own comfort, or that of his family, with the absolute necessity of keeping them at a proper distance. When we hear of ladies who make pets of cats and dogs, we can only lament such mistaken kindness; surely if *pets*

be desired, our own species furnish them in abundance; to waste the kindlier affections which more peculiarly belong to our own species upon brutes, is a degradation of intellect and the human character, for which there can be no excuse. The general character of our work, and our remarks relative to kindness to the brute creation, will prevent any misapprehension here.

CAT-SALT, a beautiful granulated species of common salt, thus called by the manufacturer. It is very pungent, and though pellucid when in a mass, becomes white on being reduced to powder; it is sometimes used for culinary purposes, but more frequently by the makers of hard soap.

CATALEPSY, a disease distinguished by a sudden suppression of motion and sensation, the body remaining in the same posture that it was in when seized.

This complaint is arranged by some medical writers under the head apoplexy. It is of rare occurrence: as it is a disease of debility, ammonia, bark, and other stimulants, promise to be most efficacious in its cure.

Cataplas. See **POULTICE**.

Cataract. See **GUTTA SERENA**.

CATARACT, in horses, an incurable disease of the eyes, consisting of an opacity, either total or partial, of a part which is naturally transparent. We call this disease incurable, because, although the cataract may be removed by an operation, an imperfection of sight will remain, so as to render the horse more dangerous to ride than if he were quite blind. See **EYE**.

CATARRH, or **COLD**, a disease very frequent in Great Britain. It generally begins with some difficulty of breathing through the nose, with a sense of fulness stopping up the passage; it is also accompanied with a weight in the forehead, and a stiffness of the motion of the eyes; an acrid fluid distils from the nose, and sometimes from the eyes; a general uneasiness is also felt over the front part of the face, communicating to the uvula, the throat, and tonsils; a hoarseness often comes

on, with a sensation of soreness in the trachea; sometimes cold shiverings are felt, and the pulse is more frequent than ordinary, especially in the evening. The cough, if any, is at first dry and painful; and wandering pains are felt in the chest, and other parts of the body. The appetite is impaired, some thirst arises, and a feverish lassitude pervades the whole body. This is the height of the disease; but it does not long continue. A more copious excretion of mucus attends the coughing, which gradually becomes thicker, and is brought up with more ease; the hoarseness gradually wears off, and in the course of three or four days, or more, the patient returns to his accustomed health. This process generally takes place without the intervention of any medicine, provided the patient has been careful to keep the body moderately warm, and has avoided such causes as increase the complaint.

Catarrh, or cold, may, therefore, in itself, be pronounced a disease neither tedious nor dangerous, unless it be mismanaged, or there be some pre-disposition in the constitution for other diseases. But when a catarrh has been produced by some violent cause, and aggravated by improper management, it sometimes passes into an inflammation of the lungs; or, particularly in females, it may bring on, without their being aware of it, that fatal complaint, pulmonary consumption, for which, at present, medicine has not in many cases found a cure.

It is of the utmost importance to be aware of the CAUSE of every disease, and particularly of the cause of the disease of which we are now treating. Medical men do not seem in general to pay so much attention to this subject as could be wished. It is now more than twenty years ago, that the celebrated Dr. BEDDOES excited the attention of the faculty to this subject; but so little do our modern ESCULAPII value his doctrine, that they seem rather disposed to be hunting after mere novelty, than of following up the outlines which BROWN, BEDDOES, and DAR-

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WIN, have so strongly, although perhaps irregularly sketched, but which only await the nicer pencillings of an observing hand, to be filled out with grace, majesty, and truth.

We can scarcely hope entirely to escape the unpleasant sensations, or to ward off the fatal effects occasioned by the unfortunate caprice of our climate; but by understanding *how colds are caught*, we may take certain simple but useful precautions against them.

When, therefore, any part of the body has been exposed to cold, so as to have parted with its usual and customary heat, it is more liable to be affected by heat, and other stimulants, than it was before the exposure; of this, the method of treating frozen limbs in cold countries, affords a beautiful and decisive instance. Now, after the application of cold, which, according to circumstances, produces a greater or smaller diminution of the actions of the living system, and at length sleep itself, there may be an infinite number of gradations, between the fatal inflammation and a transitory glow; and this according as the previous cold, and the subsequent heat, have varied in intensity. By respiring a cold atmosphere, the same thing happens to the nostrils, fauces, and lungs, as to the external surface of the body upon going into a cold bath; and if we pass suddenly from such an atmosphere into a warm room, what happens to the skin, will happen to the membrane lining these cavities: a glow or inflammation will ensue, according to the difference between the two temperatures, and the length of time passed in the cold. The whole system soon partakes of the added stimulus, which, disordering the whole body, excites our attention, in a more especial manner, to that organ which from habit or structure is most tender, and consequently more immediately suffers from the attack. Should any other part, from previous circumstances, have been rendered more sensible to its influence, we shall, in consequence, have a sore throat, a Diarrhoea, or the rheumatism, in place of a catarrh.

Children are so susceptible of inflammations, that much of the mortality among them is most probably owing to the ignorance of mothers and nurses, in not guarding them against even a moderate change of temperature, which, if suddenly made, produces catarrhs, and other diseases still more alarming.

Catarrh, therefore, whatever be the degree of inflammation from the slightest affection of the nostrils or chest, to the most acute pleurisy, rarely ever takes place, unless we pass too suddenly into a comparatively warm atmosphere, or apply a stimulus equivalent to heat: for the feverishness, the internal glow, the dryness of the nostrils, and other attendants on catarrh, are not felt while we remain in the cold; but they speedily come on after entering a warm room. The most easy means, therefore, to prevent, or to cure a catarrh, is by avoiding a sudden transition into a warm temperature in cold weather; to keep quiet and cool, but not cold, after being wet in summer, and in both cases to drink sparingly, or avoid wholly stimulating liquors, and adopt, in other respects, a temperance in regimen, both mental and corporeal.

It is impossible to lay down rules for every individual case of cold or catarrh which may occur. Some discretion must be necessarily exercised by the reader in judging of this disease: nor are the personal feelings of the patient to be wholly disregarded. There are some cases of cold, however, where a moderate portion of stimulus taken internally, immediately after having become wet in particular, will excite a due motion of the blood, and prevent any ill effects; but a large dose of stimulus must be necessarily mischievous. If, however, the disease be actually come on, all stimulants for the first three or four days, ought to be religiously avoided. Attention to the bowels in this disease is particularly necessary: in young and robust persons, a dose of one ounce of sulphate of magnesia, or of sulphate of soda, will often be of great advantage, and shorten its duration. Thin diluent liquids; gruel, and vegetable, but no

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animal food, are, in this complaint, the best. Sometimes lying in bed, with a moderate covering for a day or two, and taking gruel, or other diluents, will remove the disease without any medicine whatever: but a heavy weight of bed clothes will be found injurious.

It is unfortunate for the inhabitants of this country, that they are not subject to such a constant severity of cold, as to oblige them regularly to fortify themselves by warm clothing. But woollen clothing is preferable to either linen or cotton; and the feelings excited by woollen on the skin soon pass off, although it does not appear absolutely necessary that, in all cases, the woollen garment should be next to the skin. The most simple method, as well as the most effectual, to avoid the influence of sudden changes from heat to cold, or the contrary, is to wrap the body in substances which conduct heat slowly. For this reason, and because it is much less unpleasant when moist, flannel should be worn above linen during every season in Great Britain; and those who feel it necessary, may double it during the winter.

In children it is of the utmost consequence to keep the body cool, but never to suffer it to be cold. Thus, without being enervated, they may escape the fatal consequences of heat succeeding quickly to cold; the trite opinion that cold hardens children, must be received with many allowances.

Persons advanced in years, and subject to what is called *asthenic* catarrh, suffer from the immediate application of cold or moisture, which is but cold in another form: the transition to a cold or damp air, will immediately affect them. It is to be feared, that dress alone will not prove an effectual preservation against this kind of catarrh. A portable apparatus for warming the air before its admission into the lungs, would, could it be so contrived, ward off those pulmonic attacks which, although perhaps not often dangerous, are at all times distressing, particularly in our variable climate. It is well known, that a bed-room kept in a mo-

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derate degree of warmth, will often prevent those harassing paroxysms of coughing which attend this complaint.

Some conclusions of importance, corroborative of this view of catarrh, may be drawn from the consideration, that amongst wild animals, catarrh is a rare disease, with domesticated ones more common, and with man most common of all. See CONSUMPTION.

CATARRH, or COLD IN HORSES, is a disease which happens more frequently perhaps than any other. It is generally caused by exposing a horse to a current of air, or to cold wind or rain; and is more likely to be produced, if the animal has been previously heated by exercise, or accustomed to a warm stable, and warm clothing. The most common symptoms are cough, dulness of the eyes which are sometimes inflamed and watery, and want of appetite either for food or water; sometimes the throat is sore, accompanied with a difficulty of swallowing; the glands under the jaws, and beneath the ears, are also sometimes swoln. These symptoms are commonly succeeded by a discharge of matter from the nostrils, which is generally beneficial: bleeding, unless the weakness of the horse forbid it, must be had recourse to in an early stage of the disorder, if fever be present, the cough troublesome, and the pulse quick. Should the symptoms not abate in two or three days, the operation must be repeated. If the bowels are open, the only medicine necessary is the following made into a ball, or taken in powder twice a day: nitre one ounce; emetic tartar one drachm and a half, or two drachms. If there be soreness of the throat, much harm may be done by endeavouring to give either a ball or drench: in such case, the medicine should be put into the horse's mash; but if it prevent him from eating it, let the medicine be omitted. If the horse be costive, or if the dung be at all hard, give a laxative. Moderate warmth will be necessary, but a hot stable ought by all means to be avoided.

CATCHWEED, the TRAILING German Madwort, or *Asperugo pro-*

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cumbens, an indigenous plant growing amongst rubbish, and producing blue or purple flowers in April and May. Sheep are fond of it; and its tender leaves may be dressed, and eaten as an excellent culinary vegetable.

CATECHU, or *extractum catechu*, called also, very erroneously, Japan-earth, is extracted from the wood of a tree, a species of acacia, growing in the East Indies. There are two kinds of catechu; one brought from Bengal, the other from Bombay. The pale and dark-coloured, are mixed in the same package. The pale is generally in small square cakes, of a pale reddish brown colour, light and friable, with a rough fracture; it has a bitterish and astringent taste, with a degree of sweetness; and is inodorous. The dark, which is in round masses, has a deep chocolate-colour internally, with the hue of rusty iron on the outside; the fracture is shining and resinous. It is heavier than the pale, and has a more austere and bitter taste; but in other respects agrees with it. Both are often adulterated with sand, and other impurities. They are both almost entirely soluble in the mouth. The best catechu consists of about 54.5 parts of tanin; 34 of extractive matter; 6.5 of mucilage; and 5 of earth, and other impurities.

Catechu is one of the most valuable vegetable astringents; and as the dark-coloured contains the greatest quantity of tanin, on which its astringency depends, it is to be preferred for medicinal use. It is employed with the best effects in dysentery, and diarrhœa, when the use of astringents are admissible: in hæmorrhages of the bowels, and uterus; in leucorrhœa, gleet, and in obstinate catarrhal affections. It is also used as a local astringent, in sponginess of the gums, and aphthous ulcerations of the mouth and fauces; we have found the slow solution of a small piece of it in the mouth, a certain remedy for the troublesome cough induced by a relaxed uvula, hanging into, and irritating the glottis. Made into lozenges, and dissolved slowly in the mouth, it is said to promote the clearness of the voice.

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An ointment composed of four ounces of catechu, nine drachms of alum, four ounces of yellow resin, and ten fluid-ounces of olive-oil, with a sufficient quantity of water, is in great repute in India, as an application to ulcers.

The dose of catechu in powder, may be from ten grains to two scruples, or more.

A *Compound infusion of catechu*, is ordered by the London College, to be made thus: Take extract of catechu bruised, two drachms and a half; cinnamon-bark bruised, half a drachm; boiling-water half a pint. Macerate for an hour, in a slightly-covered vessel, and strain. This infusion, a powerful and agreeable astringent, is the best form under which catechu can be prescribed. It is very useful in long-continued diarrhœas, and other fluxes proceeding from a weakened state of the intestines. The dose is from one fluidounce to three, to be given after every loose motion, or every four hours.

A *tincture of catechu* is also kept in the shops. It is used with the same intentions as catechu itself: the dose is from one fluidrachm to three, taken in wine, or water.

A *compound electuary of catechu* is ordered by the Edinburgh College, which is a warm, aromatic, and powerful astringent and opiate; it is given in diarrhœas and dysentery. The dose is from one scruple to two drachms. Ten scruples contain one grain of opium.

The following substances alter or destroy the qualities of catechu, and should not, therefore, be given with it: solution of isinglass; infusion of yellow cinchona-bark; the strong acids; sulphate of iron; sulphate of zinc; oxy-muriate of mercury; tartarized antimony; and super acetate of lead. The alkalies only deepen the colour.

CATERPILLAR, a term given to insects in the state of worms; this state is also called by modern naturalists, larve, or larva. The term is sometimes vulgarly, but erroneously, applied to the cock-chaffer, *scarabæus melolontha*, in its winged state. See **BEETLE**.

CATHARTICS, are medicines

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which, taken internally, increase the evacuations of the bowels. The most common cathartics are the following : aloes, jalap, scammony, senna, colocynth ; the sulphates of magnesia, soda, and potash ; cream of tartar, rhubarb, manna, castor-oil, &c. See **PURGATIVES**.

CATHARTICS, in the veterinary materia medica, are few in number : aloes is the principal, if not the only one, to be depended upon ; others are, however, occasionally employed, such as castor, olive, and linseed-oils, and the neutral salts. Calomel may also be considered as cathartic, if given in a sufficient dose, but it is generally joined with aloes.

CATHETER, a long and hollow tube, introduced by surgeons into the bladder, to draw off the urine, when the patient is unable to pass it. It is made of different lengths, for male and female subjects.

CATMINT, **NEP**, or *Nepeta*, a genus of plants, containing seven species, chiefly natives of the South of Europe ; one the *nepeta cataria*, or common catmint, indigenous to our own country, and found wild in our hedges ; it has a perennial root, and flowers from July to September. The scent of the entire plant is between that of mint and penny-royal. Cats are fond of it, whence its specific name. It has been recommended in dyspepsia and flatulency, but is scarcely known in modern medicine.

All the species of *nepeta* are perennial plants, readily propagated by seeds, which may be sown either in spring or autumn.

CAT'S-TAIL, **REED-MACE**, or *typha*, a genus of aquatic plants, containing three species, all natives of our own country. The *latifolia*, or broad-leaved cat's-tail ; —the *angustifolia*, or narrow-leaved cat's-tail ; and the *minor*, or lesser cat's-tail. The two first are found in ponds, the last in marshes.

The *latifolia* has a stalk from six to eight feet high, leaves a yard long, and somewhat sword-shaped, cylindrical catkins.

The leaves are occasionally used for

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rush-bottomed chairs, and also by coopers for calking the joints of casks. In Russia the woolly down surrounding the seed, is mixed with feathers, and used for stuffing bolsters. A blotting paper has also been made with a mixture of the same down, and linen and woollen rags.

CATTLE, a collective word implying those four-footed animals which serve either for tilling the ground, or for food for man. They are distinguished into large, or black-cattle, and into small cattle ; the former consist of bulls, oxen, cows, heifers, and calves ; the latter are rams, ewes, weathers, lambs, goats, kids, &c. Cattle are the chief stock of a farm. See the respective heads in the order of the alphabet. See also **BREEDING** and **HUSBANDRY**.

CATTLE, **DISEASES OF**. See **BLOWN**, **CALVES**, **QUARTER EVIL**, &c. &c.

CAUDEX, in botany, the stem or trunk of a tree.

CAULIS, in botany, the stem or stalk of herbaceous plants.

CAULIFLOWER, a variety of the *brassica oleracea*, or sea-cabbage, called by Linnæus *botrytis*, is said by some writers to be merely an improved kind of our own native sea-cabbage, by others that it is a native of the island of Candia ; the latter is most probable. However, cauliflowers have of late years been so far improved in England, as to exceed in size and goodness any that are raised in the rest of Europe. They are in season in the months of May, June, and July ; but the skill of the gardener can continue them much longer.

The manner of propagating them is this : Having procured some good seed, it should be sown before the middle of August, upon an old cucumber, or melon bed, and the earth must be sifted over the seeds, to a quarter of an inch in thickness. If the weather prove very hot and dry, the beds must be shaded with mats, and be also lightly watered at times. In about a week's time the seeds will come up, and they must be uncovered by degrees, but not exposed to too much sun at first. In about a

month more, they should be pricked out on another old bed, at three inches distance, and shaded and watered when first transplanted; but after this they must not be watered, nor be suffered to have too much rain, which will make them black-shanked, or rotten in the stalks. In this bed they should remain till the middle of October, when they are to be planted out for the winter season, in rich beds, and those which are designed to be early ripe, are to be shaded with bell-glasses, and in February to be planted out again: the rest are first to be set at a greater distance, and to stand. When the cauliflowers begin to fruit, they must be carefully watched, and some of the inner leaves must be bent down over the flower, to shade it from the sun: without this covering the flower would turn yellow. The very finest of the heads should be saved for seed, and the flower-stems, as they shoot out, be supported with sticks till the seeds are ripe, which must then be carefully gathered and dried for use. It is of importance in selecting the cauliflowers for seed, to take care that no other species of the cabbage blossoms in their neighbourhood: for if they do, the seed will most probably be corrupted.

The seed of *broccoli*, or, as it is sometimes called, *cauliflower broccoli*, should be sown about the middle of May, in a loose moist soil; when the young plants have eight leaves, they are to be transplanted, at three inches distance; and when they have grown there till the middle of July, they will be fit to plant out for standing. They must be now set in a well-sheltered light soil, but not under the dripping of trees, and one foot and a half from one another. About the beginning of December they will begin to shew their heads, which look somewhat like cauliflower; from this time they will continue eatable till March or April. When the heads divide, and begin to run up, they must be cut with about four inches of the stem to them; and when they are cut off, in a month a fresh crop may be cut from the same

stalk. They are to be stripped of their outer leaves and boiled; when fine, they are very little inferior to asparagus. The best way to have them fine, is to get fresh seed every year from Italy, as they are very apt to degenerate.

CAUSE, that from which any thing proceeds, or by virtue of which any thing is done: it is frequently opposed to effect, which is the completion of the operation of a cause.

As in nature, the more closely we examine her operations, the more we become convinced that no effect takes place without a cause; so in morals, the more attentively the operations of the human mind are considered, and the various motives for our actions examined, the more shall we become convinced, that even in this still abstruse and difficult science, no effect whatever, or in other words, no moral action takes place, without some cause prompting us to act. Upon the most perfect knowledge of the causes of moral action, does education, and our improvement in morals depend: for if certain causes produce in morals certain and determinate actions, and we think it is clear in an infinity of instances, that they do so, a knowledge of the cause of actions, whether good or bad, will enable us, and prompt us, to supply if possible, the causes for good actions, and to abstract, if possible, the causes for bad actions, either in ourselves or others. We conclude, therefore, that in morals as well as in nature, there is no effect without a cause. A thorough conviction of this truth, in the hands of the moralist, the teacher, the statesman, and the friend of the human race, must inevitably lead to results most important and beneficial to the melioration, comfort, and happiness of man.

CAUSTICS, are medicines commonly applied only to the exterior surface of the body, which possess the power of destroying the texture of the various solid parts to which they are directly applied; the operation of caustics resembles that of fire. The principal caustics are the following: the sul-

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phuric, nitric, and muriatic acids; the muriate of antimony, nitrate of silver, potash with lime, and fused potash; these have been called potential caustics. See the respective articles, **ESCHAROTICS**, and **POTASH**.

CAUSTIC-BARLEY, *cevadilla*, or **INDIAN CAUSTIC-BARLEY**, the seeds of a Mexican plant, which are, as their name imports, a strong caustic. They are scarcely known in this country; but are said to be used on the Continent for destroying cutaneous insects in children; and that they have been given internally with good effect in some cases of tape-worm.

CAUTERY, the **ACTUAL**, a term given to that mode of burning the solid parts of the animal body, in which red-hot irons, or other burning bodies, such as tow, cotton, live-coals, gunpowder, &c. are employed. One of the best actual cauteries, the most expeditious, and least painful, is that of strewing on the wound a small quantity of the finest gunpowder, and then setting fire to it: it may be practised with success after the bite of a mad dog, and will render the operation of the knife unnecessary. For potential caustics, see **CAUSTICS**.

CAVIARE, a kind of food made in Russia, from the hard roes of the sturgeon, formed into small cakes about an inch thick, and three or four inches broad. It is made by separating all the fibres from the spawn, then washing it with vinegar, and spreading it on a table; it is then salted and pressed in a fine bag; after which it is packed in a vessel with a hole in the bottom, that the moisture if any, may run out. This food is in great request among the Muscovites. It is more easily digested than pickled salmon; and might possibly be prepared from the sturgeon and some other fish frequenting the shores of Great Britain.

Cayenne Pepper. See **CAPSICUM**.

CEDAR, a name given to several trees belonging to different genera. For *cedar of Lebanon* see **PINE**; for *red cedar* see **JUNIPER**; for *white cedar* see **CYPRESS**.

CEILING, in architecture, the top

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or roof of a room, consisting of a covering of plaster spread on laths, nailed to joists which support the room above, or where there is no room above, to joists affixed for the purpose, called ceiling-joists. Ceilings are, generally, in common dwellings, finished smooth, and without ornament; but in the houses of the opulent, they have either a cornice, consisting of more or less ornamental work in plaster, or are divided into compartments, with various figures and devices. Ceilings are also sometimes *coved*, which are certainly more beautiful than flat ones, and, of course, much more expensive.

CELANDINE, or *chelidonium majus vulgare*, a plant found wild on the wastes of our own country. The herb and root have a faint, unpleasant smell, and a bitter, acrid, and durable taste, stronger in the root than the leaves. They have been recommended in jaundice, chlorosis, and dropsy; the dried root in powder, in doses of half a drachm, or a drachm; or an infusion in wine or water, of a drachm, or a drachm and a half of the fresh root; or three or four drops of its saffron-coloured juice, in any convenient vehicle, are taken for a dose. Great caution is, however, necessary in taking this medicine, as it is liable to irritate both the stomach and bowels.

It is employed occasionally by the common people to destroy warts, cleanse foul sores; and for some complaints of the eyes, attended with dimness of sight; with this last intention, the juice must be largely diluted with milk, to be applied to that tender organ.

CELERY, or *apium graveolens*, a species of parsley, growing on the sides of our ditches, and then called **SMALLAGE**, but when cultivated in our gardens, **CELERY**. The seeds of smallage, which abound with an essential oil, possess the smell and taste of the garden celery, but more powerful, and are very convenient for flavouring soups, and other dishes. The leaves and stalks of smallage are, however, said to be noxious, but when cultivated, they are divested of their noxious qualities.

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The seeds of celery should be sown at different times during the spring and summer, in order that it may become fit for the table in succession. The first sowing should be in the beginning of March, on a gentle hot-bed ; another might be towards the end of the month in a warm border ; another may be the latter end of April, or the beginning of May, on a moist soil, where it may be exposed to the morning sun only ; and another sowing may be made yet later towards the end of the month, or beginning of June. About the middle of May, some of the plants of the first sowing will be fit to be transplanted into trenches for blanching. These must be three inches from one another, and about eight or ten inches in width, and a foot or more deep, the earth being laid up on each side, in order to its being drawn in again around the plants as they grow up. The plants, being trimmed by having the tops of their long leaves cut off, must be set in the middle of the trench, about four or five inches apart, care being taken to close the earth well round them, and to water them plentifully, till they have taken new root. When about half grown, the lateral fibrous roots should be carefully removed with a knife, and the earth closed round the parent root, without burying the hearts. The last crop should be planted in a drier soil, and in order to prevent it from rotting in the winter, it should be covered from severe frost by pease-haulm, or similar substance, which admits the access of air ; this covering must always be removed when the weather becomes milder : for otherwise the celery will pipe, and run to seed. When full blanched, this root will not continue good above three weeks or a month ; to insure, therefore, a succession of crops, it is necessary to have, at least, six or seven seasons of planting.

There is another kind of celery called *CELEBIAC*, having a large knobby root, of a delicate flavour, and from three to five inches in diameter ; but it is seldom to be met with in this country. The root is preserved through the

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winter in sand ; cut in slices and eaten with vinegar, it affords a pleasant dish.

The roots of smallage are eaten by sheep and goats, but cows and horses refuse them.

Celery, as an article of food, is one of those condiments which is of more importance to the palate than to the health : whatever may be the utility of such warm stimulants when taken occasionally, their constant use renders them of very little consideration indeed. We believe, however, that it may be eaten by most persons, and almost at any time, without injury or inconvenience, hypochondriaca and dyspeptic patients not excepted.

CELIBACY, the state of unmarried persons ; a state which has been in most civilized countries attended, in the male sex, and after a certain age, with more or less opprobrium. Celibacy does not appear to be sanctioned by any laws either expressed or understood : on the contrary, all wise states have uniformly held out inducements to early marriages, as not only the best policy, but as more agreeable to nature, and to those wholesome morals to which it is our duty to attend. The present age has, however, witnessed a most extraordinary attempt in the sophisms of a *MALTHUS*, to overturn the common sense of mankind on this subject, and to persuade us that matrimony, in the present state of the population of these kingdoms, is a great and growing evil ; and that positive laws ought to be enacted to prevent the increase of our species ! But the use of a few grains of common sense are, we are happy to say, a complete cure for such attempts to impose upon the understandings of mankind.

CELLAR, in modern building is, generally, the lowest room in the house ; and in cities, is usually beneath the surface of the ground ; it is also sometimes under the pavement before the house, particularly in streets and squares ; but no cellar, liable to the constant agitation produced by the rolling of carriages in a crowded street, is good for containing fermented liquors.

A cellar ought to be cool, but not cold; and although an occasional change of the air in it is absolutely necessary, a current of air passing constantly through it, must introduce, often, a change of temperature that is very injurious to fermented liquors. A very close cellar is, however, a dangerous appendage to a house: for if it should become filled with carbonic acid gas, so copiously discharged during the fermentation of cider, all malt-liquors, perry, &c. a person descending into it may be suffocated, and his life irrecoverably lost. A sure criterion of the air of a cellar's being sufficiently pure to breath in, is when a candle will burn in it: if it goes out, it is certainly deadly, and means must be taken to change the air before any person ventures into it. See AIR, BREWING, CARBONIC ACID, and CHARCOAL.

CELLULAR MEMBRANE, in anatomy, the cellular structure composed of membranous fibres, variously joined together, and which is the connecting medium of every part of the body. It makes a bed for the other solids, covers them all, and unites them one to another. It is by means of the communication of the cells of this membrane that butchers blow up their meat.

CEMENT, in a general sense, implies any substance capable of uniting and keeping things together in close cohesion. In this sense it comprehends mortar, solder, glue, &c. but is more commonly applied to those compositions used for holding together broken glass, china, and earthenware.

The following are some of the most approved cements. The juice of garlic used alone. Quicklime and the white of an egg, mixed together and used expeditiously. Quicklime and cheese: sweet cheese is to be shaved thin, and stirred with boiling-hot water, which converts it into a tenacious slime. It is then to be worked with fresh quantities of hot-water, and mixed upon a hot stone with a proper quantity of unslacked lime, into the consistence of a paste: this is a strong and durable cement for wood, stone, earthenware, and glass.

Take by measure, two parts of litharge, one of unslacked lime, and one of flint-glass; let them be separately reduced to a very fine powder, and worked up into a paste with drying-oil. For cementing wood, pitch, bullock's-blood, linseed-oil, and common turpentine, are to be melted together over a fire, in an iron pan, and as much brick-dust added, as will make them of the consistence of a thin paste. The tub or cask, to which this is applied, must be perfectly dry before it is laid on; and the chinks or crevices, filled up with tow while the cement is warm. Cheese produces an excellent cement by boiling it in water, stirring it until it is reduced to a glutinous state, and afterwards pouring upon it cold water, and kneading and pounding it.

A cement for electrical purposes may be made thus: Melt one pound of resin over a slow fire; add to it as much plaster of Paris in fine powder, as will make it hard enough, which you may know by trying it; then add a spoonful of linseed-oil, stirring it all the while, and try if it be hard and tough enough for your purpose; if not hard enough, add more plaster of Paris; if not tough enough, more linseed oil. Another may be made with one pound of resin, one ounce of bees-wax, and add thereto as much red-ochre as will make it sufficiently stiff; pour it into water, and make it into rolls for use. This last cement is useful for fixing hoops on glasses, or any other mounting of electrical apparatus. The former is used for fixing the necks of globes, or cylinders, &c.

Broken glass may be cemented so as to be as strong as ever, by interposing between the parts, glass ground up like a pigment, but of easier fusion than the pieces to be joined, and then exposing them to such a heat as will fuse the cementing ingredient without melting the pieces to be united. A glass for cementing broken pieces of flint-glass may be made by fusing some of the same kind of glass, previously reduced to powder, along with a little red-lead and borax, or with borax only.

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A cement for *Derbyshire spar* and other stones, may be made with about seven or eight parts of resin, one of bees-wax melted together, with a small quantity of plaster of Paris: when the ingredients are well mixed and nearly cold, the mass should be well kneaded together. The pieces of spar to be joined, must be heated until they will melt the cement, and then pressed together, some of the cement being previously interposed. Melted sulphur applied to fragments of stones, previously heated to the melting point of sulphur, makes also a firm and durable joining. Little deficiencies of the stone may be filled up with melted sulphur, in which some of the powder of the stone has been mixed.

Hot cement for building, is made of resin, bees-wax, brick-dust, and chalk boiled together. The bricks to be cemented are to be heated, and rubbed one upon another, with the cement between them.

For other cements in buildings, &c. see MORTAR.

CENTAURY, THE COMMON, or *chironia centaurium*, is an indigenous annual plant, growing in dry gravelly pastures, and flowering in July and August. The root is small, woody, and branching; the stalk, which rises about a foot in height, is erect, smooth, and quadrangular. The leaves are smooth, and the flowers expand only in the sunshine.

Common centaury is tonic and antiseptic. Before the discovery of the Peruvian bark, it was much used in the cure of fevers, and was one of the ingredients of the once-celebrated Portland powder. It is, however, a useful bitter tonic, and may well supply the more expensive remedies of this kind, in dyspeptic complaints. The dose of the dried tops in powder, is from half a drachm to one drachm; and of an infusion, made by macerating six drachms of the dried tops in half a pint of boiling water, and straining, from one fluid-ounce and a half, to two fluid-ounces, three or four times a day.

CEPHALICS, medicines which re-

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lieve or remove disorders of the head. See HEAD-ACH.

CERATE, in pharmacy, a composition rather harder than an ointment and softer than a plaster. The following are the principal cerates now used.

SIMPLE CERATE: Take of olive-oil four fluidounces; of yellow wax four ounces. Having melted the wax, mix in the oil, and stir it till cold.

CALAMINE CERATE. See CALAMINE.

CERATE OF BLISTERING-FLY: Take of spermaceti cerate six drachms; of blistering flies in very fine powder one drachm. Having softened the cerate by heat, add the flies and mix them together.

COMPOUND LEAD CERATE; commonly called Goulard cerate: Take of extract of lead two fluidounces and a half; yellow wax four ounces; olive-oil nine fluidounces; camphor half a drachm. Mix the wax, previously melted, with eight fluidounces of the oil; then remove it from the fire; and, when it begins to thicken, add gradually the extract of lead, and constantly stir the mixture with a flat wooden stick, or lath, until it is nearly cold; lastly, mix in the camphor, previously dissolved in the remainder of the oil.

CERATE OF RESIN: Take of yellow resin and yellow wax, of each six ounces and a half; of olive-oil eight fluidounces. Melt the resin first, then add the wax, and, lastly, the oil; strain the cerate whilst hot, through a linen cloth, and stir it afterwards till it is cold.

CERATE OF SAVIN. See BLISTER, PERPETUAL.

CERATE OF SPERMACETI: Take of spermaceti half an ounce; of white-wax two ounces; of olive-oil four fluid-ounces. Melt the wax and spermaceti together, to which add the oil, and stir the whole till it is cold.

CERATE OF SOAP: Take of hard soap two ounces; of yellow wax two ounces and a half; of litharge, in powder, three ounces; olive-oil four fluid-ounces; of vinegar one quart. Boil the vinegar with the litharge over a slow fire, constantly stirring until they are united; then add the soap, and boil

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again in a similar manner until the water is wholly evaporated, then mix in the wax previously melted with the oil.

CERATE, TURNER'S. See CALAMINE.

Simple Cerate is an emollient dressing for excoriations and sores. *Cerate of Blistering-fly* is used for keeping open blisters and, occasionally, issues. But it is more violent in its action than the Savin Cerate; it should, therefore, be used with caution. *Goulard Cerate* is useful applied to burns, excoriations, and other inflamed sores. *Cerate of Resin* is a good dressing for foul and indolent ulcers. *Cerate of Spermaceti* is a soft cooling dressing; and is very proper to be applied after a blister, when it is intended to be healed immediately. *Soap Cerate* is occasionally used as a cooling dressing.

Cerebellum. See BRAIN.

Cerebrum. See BRAIN.

Cereus. See CACTUS.

Ceruse. See WHITE-LEAD.

Chaffer, or Cock-Chaffer. See BEE-FLE.

CHAFF, the husks of corn which are separated by thrashing and winnowing. In husbandry, however, it denotes not only the husks of the corn, but also straw cut small for the food of cattle.

It appears that wheat-straw is, upon the whole, the best for being cut into chaff; it having confessedly the most heartening quality in it, and is not found, as some have surmised, to be exhausted by ripening its seed; but, on the contrary, the plumper the grain the more solid and nutritious is the straw, the excellence of the one adding to the perfection of the other. See the next article

CHAFF-CUTTER, or **STRAW-CUTTER**, a machine for making chaff to feed horses and cattle.

The chaff-cutter was, till of late, a separate apparatus, and the work was executed by manual labour, but the purposes of the cutter are more effectually accomplished when it is annexed to any machine, as a thrashing-mill driven by water, by wind, or by cattle.

Mr. Heppenstall, of Doncaster, has

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simplified the machinery of this instrument, so that it will do more work with two-thirds of the power than any other before made. It is not liable to be put out of order with fair working; and, from the simplicity of the movements, it may be kept in repair for a series of years at a very trifling expense.

Chaffinch. See FINCH.

CHAIN, a long piece of metal composed of several links, or rings, engaged the one in the other. Chains are made of various metals; some are also flat, others square; some single, and some double. Iron chains are undoubtedly the strongest. Those which have the pliability of the rope are doubtless the most useful.

CHAIN, in surveying, a measure of length, made of a certain number of links, or iron wire, serving to take the distance between two or more places. There are several chains of this kind: one is a chain of fifty feet, another is a chain of one pole, or sixteen feet and a half in length; especially useful in measuring, and laying out gardens and orchards, or the like, by the pole or rod measure. And another, most in use, is a chain consisting of 100 links, or 4 poles, or 66 feet, or 22 yards in length, called **GUNTER'S CHAIN**, peculiarly adapted to the business of surveying, or land-measuring, because 10 square chains make exactly an English acre of land. So that the dimensions being taken in these chains, and thence the contents computed in square chains, they are readily turned into acres by dividing by 10, or merely cutting off the last figure from the square chain. But a better practical method is this: count the dimensions not in chains but all in links; the contents will then be in square links, and five figures being cut off from the decimals, the rest are acres: the four figures bringing the square links to square chains, and one more to bring the square chains to acres.

In this chain the links are 7.92 inches in length, which is very nearly two-thirds of a foot. And, hence any number of chains, or links, are easily brought to feet and inches, or the contrary. The

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best way of doing this, is to multiply the number of links by 66, then cut off two figures for decimals, and the rest are feet; or, multiply links by 22 for yards, cutting off two figures. See ACRE.

CHAIR, an article of furniture contrived for the convenience of sitting, and by such means relieving the lower extremities from the support of the weight of the body.

The form of chairs, or their softness or hardness, is of very little consequence to those persons who only sit down occasionally, but to those who are in the habit of sitting for hours in one place and posture, it is of importance that the seat should be easy, and that the weight of the body should not press unequally upon it.

Chairs, and other seats, stuffed with horse-hair, as they have considerable elasticity, are the best; or, in the absence of these, concave-bottomed wooden chairs.

CHAIR, SEDAN, a covered vehicle for carrying a single person, being supported by two elastic poles and borne by two men, hence called chairmen. The number of sedan chairs for hire allowed in London, by an Act of Parliament, is 400.

These vehicles are very convenient for the sick and infirm; but persons in health ought not to submit to the confinement of so close an apartment.

CHALDER, or **CHALDRON**, an English dry measure, consisting of thirty-six bushels heaped up, according to the sealed bushel kept at Guildhall, London: but on ship-board twenty-one chaldron of coals are allowed to the score. The chaldron should weigh two thousand pounds.

CHALK, *Creta*, or Carbonate of Lime, a genus of the class earths, consisting of lime and carbonic acid, and a few extraneous substances; white, friable, and effervescing, and nearly totally soluble in acids; it parts with its carbonic acid in the fire, but does not vitrify unless the oxygen of the carbonic acid be very forcibly prevented from escaping.

Eight species of chalk have been point-

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ed out: the *conchacea*, containing small and very minute shells, not cohering, not soiling the fingers, without lustre. Found in Etruria, Saxony, and Wirttemberg. The *granulata*, consisting of rounded, glabrous, milk-white, opaque granulations, which do not stain the fingers. Found on the Island Ascension. It is composed of shells and corals comminuted by the waves of the sea. The *testacea*, little differing from the former; found on the coasts of England and France. The *puberulenta*, or native lime; reducible to dust, without lustre, rough to the touch, and staining the fingers; it is white; when mixed with a little oxyd of iron it becomes yellowish. Found near Bath. The *squamosa*, or mineral agaric, with somewhat greasy, snow-white, shining scales, which soil the fingers, entirely soluble in nitric acid. Found near Gera. The *farinacea*, soft carbonate of lime, a variation of the former; farinaceous, loosely cohering, and soiling the fingers. Found in Britain, and various other parts in the clefts of rocks, the bottom of lakes, or calcareous mountains. The *gamil*, or arenaceous limestone, solid, hardish, and brittle. Found on the island of Rhagberg, on the coast of Antrim, and at Codrilla, on the west side of Vesuvius. Phosphoreases when scraped in the dark.

The *Scriptoria*, or **COMMON CHALK**, a soft carbonate of lime. Well known, and found in large strata in various parts of Britain, Germany, France, and Sweden. Its specific gravity is from 2,3 to 2,6. It generally contains, besides lime and carbonic acid, a small portion of argil. The average proportion of lime is 53 per cent.

Chalk is anti-acid; but it must undergo levigation and washing before it can be internally administered. In powder it is externally employed as an absorbent in burns and excoriations.

Chalk is sometimes used as a manure; in some districts it is laid over the soil at the rate of from sixty to one hundred loads per acre, and this is considered to be a profitable practice; such dressing adding rather more than

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half an inch of calcareous earth to the soil. But it is most beneficial when converted into lime. See **LIME**.

The following preparations of chalk are ordered by the London College:

THE COMPOUND POWDER OF CHALK, made thus: take of prepared chalk four ounces; of cinnamon bark two ounces; of gum arabic and tormentil root, of each one ounce and a half; long pepper two drachms. Rub them separately to a fine powder, then mix them.

This is a useful medicine in checking diarrhœa connected with acidity. The dose is from one grain to one scruple, given in the form of a mixture, rubbed up with mucilage of gum arabic and pure water.

THE CHALK MIXTURE, made thus: take of prepared chalk half an ounce; refined sugar three drachms; gum arabic, in powder, half an ounce; water one pint. Mix by rubbing the whole together.

The dose of this mixture is from one fluidounce to two fluidounces, given every three or four hours in diarrhœa.

COMPOUND POWDER OF CHALK WITH OPIUM, thus: take of compound powder of chalk six ounces and a half; of hard opium powdered four scruples; mix them.

The addition of opium to the compound powder of chalk, renders it more advantageous in diarrhœa. This powder forms a useful medicine for children, suffering under the irritative diarrhœa from teething. Two scruples of it containing one grain of opium. The dose is from one scruple, to one drachm for adults. The dose for children, must be, of course, in proportion to their age. See **DOSE**.

QUICKSILVER WITH CHALK, for which see **QUICKSILVER**.

CHALK, PREPARED. Chalk is prepared in the large way, by beating it into powder, mixing it with water into a kind of pap, and passing it through a stone mill repeatedly, till it is become soft and impalpable, either by the fingers, or between the teeth. It is afterwards put into a funnel, and pushed through the small end of it with a stick,

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and dropped upon the smooth surface of dry lumps of common chalk, which immediately absorb the water, and the prepared chalk is left in the form of drops, which are afterwards thoroughly dried in a stove. **WHITING** is a coarse kind of prepared chalk.

The London College orders chalk to be finely powdered, and thrown into a large vessel of water; it is to be stirred; and, after a short interval, the turbid water is to be poured off into another vessel, which must be set apart that the powder may subside; and lastly, the water is to be poured off, and the powder is to be dried. This is the purest, and for private use the best way.

Prepared chalk is anti-acid and absorbent. It is given advantageously in acidities of the stomach and bowels, and in diarrhœas, after all irritating matters have been removed from the intestines by previous evacuations. The dose is from ten grains, to two scruples or more.

As an external application, it is sprinkled over ulcers, discharging a thin ichorous matter, which is absorbed by the chalk, and prevented from excoriating the neighbouring sound skin. In cases of burns, it is applied in a similar manner; and a poultice laid over it, by which the skinning of the sore is much hastened.

CHALK LANDS are in general fitter for tillage than for grazing: for without the plough, the peculiar advantages derived from this soil by sainfoin could not be obtained. The plough, however, ought not to extend to those fine chalky downs, called ewe leases in Dorsetshire, which, by a very attentive management, during a number of years, have been brought to a considerable degree of fertility, as grazing land, and which are so useful to sheep in the winter.

A chalky soil, which has been in tillage, permits water to pass through it so freely in winter, and is so pervious to the sun's rays in summer, that it is the work of an age to make it a good pasture of natural grasses, more especially when the chalk lies near the surface.

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Hence in the western counties of England, many thousands of acres of this, though not ploughed for thirty years, have scarcely any grass of tolerable quality upon them, and are scarcely worth any thing. Such soils ought to be cultivated as a preparation for sainfoin in the following manner: 1st year, pare and burn for turnips to be eaten on the land by sheep, by the aid of some fodder; 2nd. barley to be sown very early with clover seed; 3rd. clover eaten off by sheep; 4th. wheat; 5th. turnips with manure; 6th. barley with sainfoin. Under this system, the produce has been great, and the ground laid down in the highest order with sainfoin, or any grass calculated for such soil. Many thousand acres of chalk lands now lying waste, might by such a system be materially improved.

CHALYBEATE, of, or belonging to iron. A term given to any medicine into which iron enters; as chalybeate waters: such are the waters of Tunbridge, Spa, Pyrmont, Cheltenham, Scarborough, and Hartfell; and pills, mixtures, &c.

Chalybeate waters ought to be drunk discreetly: in many cases of dyspepsia, and other diseases of debility, there is no doubt of their being frequently advantageous, but care should be taken that the body be kept moderately soluble during their use. Plethoric persons ought by all means to avoid them.

CHAMOMILE, or *Anthemis*, a genus of plants, of which there are thirty-nine species, chiefly natives of the south of Europe, and the Barbary coasts. Five are indigenous to our country: the *maritima*; the *arvensis*; the *cotula*; the *tinctoria*; and the *nobilis*; which last, the *anthemis nobilis*, is the systematic name of the common chamomile; called in many medical books *chamæmelum*.

The common chamomile is a perennial plant, growing in dry pastures and heaths, and flowering in August and September. The greater part of the chamomile flowers, however, which is medicinally used, is cultivated by the growers of physical plants; much of

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what is brought to London, is grown about Mitcham in Surry. The soil best adapted for this plant, is a dry sandy loam. Both the single and double-flowered varieties are cultivated; but as the sensible qualities of the flower reside chiefly in the disc florets, the single kind is preferred; and as these qualities are also stronger before the tubular florets are blown, they are then picked, and carefully dried for use. The active principles of these flowers, are a bitter extractive matter, resin, and essential oil.

Chamomile flowers are tonic and carminative; yet when a strong infusion of them is taken in a tepid state, it often proves powerfully emetic, and is often given to promote the operation of other emetics. Given in substance, united with opium, and astringents, if the bowels be easily affected, they have been successfully used in the cure of agues. The infusion in combination with ginger, or other aromatics, and the alkalies, particularly ammonia, is an excellent medicine in dyspepsia, chlorosis, gout, flatulent colic, and debility of the intestines. By boiling in water, the essential oil is dissipated; chamomile flowers ought, therefore, never to be boiled. Externally, they are used as fomentations in colic, intestinal inflammation, and to spreading ulcers. An infusion of chamomile flowers is also a useful addition to emollient glysters in flatulent colic, and irritations of the rectum, producing tenesmus.

The dose of the powdered flowers, is from half a drachm to two drachms, twice or thrice a day. But the best method of obtaining the virtues of chamomile, is by infusion.

An *infusion*, made by pouring half a pint of boiling water on two drachms of the flowers, and to be macerated ten minutes in a closely-covered vessel, is ordered by the London College: but one hour is, perhaps, a more proper time. The dose is from one fluidounce to two, two or three times a day. This infusion should not be mixed with isinglass, infusion of yellow bark, sulphate of iron, or tincture of muriate of iron;

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nor oxymuriate of mercury ; as these, as well as some other preparations of silver and lead, are decomposed or altered by it.

The *extract of chamomile flowers* is not so powerful as the infusion ; it is used occasionally in pills with other medicines. The dose is from ten grains to one scruple, given twice or thrice a day.

The *oil of chamomile flowers*, when genuine, is of a pungent taste, and smells strongly of the chamomile. It is recommended in cramp of the stomach, and is sometimes added to purgative pills. The dose is from five drops to ten.

CHANCE, a term in the common language of life, applied to events which happen without any apparently connecting cause. Strictly speaking, however, there is no such thing as chance either in the moral or natural world : for from the progress of events, whose causes are known, we are enabled to determine that those events, the causes of which are to us unknown, must, from the very nature and constitution of things, be produced by some cause. This consideration is one of the most consolatory kind : for as every thing proceeds in a certain order, we are enabled to predict with tolerable accuracy, the result of any given natural, or moral process. Thus, in morals for instance, a good education necessarily produces good habits and manners, and a bad education the contrary ; indeed, so well is this already known and acted upon, that we expect a child educated among thieves will become a thief ; and that a child educated in regular and moral habits, will become moral : nay, we know that upon education most commonly depend the thoughts and actions of the future man. Not the mere education conferred by schools, but the whole concourse of circumstances, such as parental admonition and example, the association of company, &c. Some occasional exceptions to this doctrine we are aware may be named, arising principally from the strong and inherent power of natural capacity. But these by no means

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invalidate the general truth. See **CAUSE**, **CAPACITY**, and **EDUCATION**.

CHAPS, or **CHOPS**, are cracks which appear in the skin on various parts of the body, such as the face, hands, lips, nipples, &c. They are occasioned by various circumstances ; but the most common cause of chaps is exposure to cold.

Chaps on the lips, may in general be cured by simply covering them for a few days with common court plaister. The best application to chaps of most kinds, including sore nipples, is **PO-MADE DIVINE** : see that article. But in many cases, merely rubbing the parts with spermaceti cerate, so as to prevent the action of the external air, will be sufficient. A drachm of alkanet root, digested in one ounce of oil of almonds in a moderate heat for a few hours, and the oil mixed with two ounces of the spermaceti cerate previously melted, with the addition of a few drops of oil of cloves, will make an elegant lip-salve.

If, however, chaps extend to a great depth, and become difficult to heal, they must be treated with digestive ointment, and in other respects as a simple wound ; chaps sometimes arise from a scrofulous taint in the constitution ; in this case, attention to the general health, as well as external applications, will be necessary.

CHARACTER, in morals, that assemblage of qualities, both natural and acquired, which distinguishes one individual from another, or which often marks with strong outlines a great number of individuals of the same habits and education : the people called Quakers, in Great Britain, are striking examples of the last ; and striking proofs, also, of the almost omnipotent nature of circumstances or education, in the formation not only of individual, but of social and national character. In the hands of benevolent and wise statesmen, how might not the powers for the formation of character be wielded, both for individual and national happiness.

CHARCOAL, or impure **CARBON**, or *carbo ligni*, is the black residue of

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vegetable matters, whose volatile principles have been dissipated by heat. It is generally black, brittle, and sonorous.

Charcoal may be prepared by heating pieces of wood, covered with sand, to redness, and keeping them in that state for about an hour. They are converted into a black brittle substance, which appears to be the same, from whatever kind of wood it has been procured. Charcoal may be, also, obtained from some animal substances. Ivory black is an impure charcoal. See **IVORY BLACK**.

Common charcoal employed as fuel, is usually made of oak, chesnut, elm, beech, or ash wood, the white and resinous woods being seldom used. Young wood affords a better charcoal than large timber, which is also too valuable to be thus employed. It is formed into a pile, which being covered with earth or clay, is suffered to burn with a limited access of atmospheric air, by which its complete combustion, or reduction to ashes, is prevented. Another, and a more perfect mode of preparing charcoal, consists in submitting it to a red heat in a kind of distillatory apparatus, consisting of cast iron cylinders, from which issue one or more tubes for the escape of the gaseous matter. The makers of gunpowder particularly, prefer this process. A plate of this apparatus may be seen in **PARKE'S Chemical Essays**.

The quantity of charcoal obtained from different kinds of wood is liable to much variation. From 100 parts of the following woods have been obtained the annexed quantities of charcoal. Beech 15,00; Mahogany 15,75; Lignum Vitæ 17,25; Oak 17,40; Fir 18,17; Box 20,25.

Charcoal is a black, insoluble, inodorous, and insipid, brittle substance; an excellent conductor of electricity, but a bad conductor of heat; unchanged by the combined action of air and moisture at common temperatures; infusible; and easily combustible, in oxygen gas, or in atmospheric air. It is capable of destroying the smell and taste of a variety of vegetable and animal substan-

ces. The use of charring piles and posts, of throwing charcoal into putrid water, of wrapping it in cloths which have acquired a bad smell, of adding it to port wine with a view to making it tawney, depends upon the above properties.

Newly-made charcoal has the property of absorbing certain quantities of different gases. Of ammonia it has been known to absorb ninety times its own volume; of muriatic acid gas, or chlorine, 85; of sulphurous acid 65. But it appears that this property depends upon the mechanical texture of the charcoal in different woods: for by exposing the charcoal of different woods to air, they increase differently in weight. By a week's exposure, charcoal from Lignum Vitæ gained 9,6 per cent; Fir 13,0; Box 14,0; Beech 16,3; Oak 16,5; and Mahogany 18,0 per cent. The matter absorbed in these cases consisted principally of aqueous vapour, which is greedily imbibed by newly-made charcoal.

Charcoal is used as fuel for various purposes in the arts; it is used in large quantities in smelting of iron ore when it can be obtained cheap; it is also used by copper-plate printers, and others where heat is wanted without smoke. It is also a principal ingredient in gunpowder, and it is also used in making crayon pencils.

Charcoal has also been latterly used for correcting the foetid odour of putrifying animal and vegetable substances. It also destroys the smell, taste, and colour of other substances, particularly of mucilages and oils, and matters in which the extractive principle abounds. Thus, common vinegar boiled in charcoal-powder becomes colourless; water which has become foetid at sea, is also purified by filtering it through charcoal; that intended for long voyages may be preserved perfectly pure by thoroughly charring the inside of the casks in which it is kept. The burnt smell and tastes of oils, as well as their adventitious colour, and also the colour of the varieties of ardent spirits, such as rum, brandy, &c.; and

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also the colour of wines; and the colour of litmus, indigo, and other colouring matters, dissolved or suspended in water, are destroyed by running them through newly-prepared charcoal powder. It also deoxidizes most of the acids.

Charcoal for medicinal use should be that prepared in the iron cylinders before-mentioned. But, for internal use, it is, perhaps, necessary to have it still purer; which it may be made thus: the charcoal is to be reduced to a fine powder, and put into a crucible so as to fill it, on which a pierced cover must be luted. This vessel is then to be heated red hot, and kept so as long as a blue flame appears to issue from the hole in the cover; when this ceases the crucible is to be taken out of the fire, cooled in a dry place, and the charcoal instantly put into well-stopped bottles for use.

But, in whatever manner charcoal is prepared, the purest contains, generally, about one-fifth of its weight of earths, salts, or metallic matters: its other constituents are about 68,4 of carbon, 1,5 of hydrogen, and a minute portion of oxygen.

Charcoal is evidently an antiseptic; and as such has been given internally to correct the putrid eructations of some kinds of dyspepsia. But in order that it should be effectual to this end, it ought to be taken recently prepared, or that which is preserved in well-stopped bottles. It has also been applied advantageously, mixed up in powder with boiled bread, or linseed-meal and water, as a poultice to foul ulcers and gangrenous sores. It is the best tooth-powder known. The dose of charcoal taken internally may be from ten grains to one drachm, combined with a few grains of rhubarb.

CHARCOAL, THE FUMES OF BURNING, have often produced death, and, therefore, cannot be too much guarded against. We have stated under the articles **BREWING** and **CARBONIC ACID**, the nature of the gas obtained from charcoal and various other bodies. It

may be necessary to state here, that when charcoal is set on fire, a large quantity of carbonic acid gas is generated during its combustion, which, under ordinary circumstances, is completely invisible; but, it is also necessary to bear in mind, that unlike most other combustions, the most mischievous part of the generated gas *descends*, so that if charcoal be burnt in a close room, and the gas cannot find a ready exit by the door, or other lower part of the room, it may soon fill it in sufficient quantity to destroy persons who sleep on a bed, or on the floor of the room.

An open chimney is no advantage in this case, unless a strong current of air ascend through it. The exhalations from lime-kilns, brick-kilns, and the gas in cellars, and other places where wine, or other liquors, are in a state of fermentation, that in mines, known under the name of choak-damp, and in wells, and some caverns, when it occupies the lower parts of them, are the same gas: viz. **CARBONIC ACID**.

Whenever, therefore, persons are found in a state of apparent death from being immersed in, or having inhaled such gas, whether from the fumes of burning charcoal, the exhalations of lime-kilns, the gas from fermentation, the choak-damp of mines, the gas of wells, or the gas in the lower parts of caverns, the following method must be pursued for their recovery.

Persons who have inhaled carbonic acid gas feel a great heaviness of the head, intolerable singing in the ears, great disposition to sleep, so great a loss of strength as to be unable to support themselves upright, a dimness of sight, excessive pains in the head, great difficulty of breathing, and violent palpitation of the heart, followed by a suspension of the respiration and circulation; the senses no longer exercise their functions, and sensibility appears extinct; the limbs are flexible, sometimes stiff and contorted; the heat of the body is natural; the face is sometimes red or violet, at other times pale and very livid; sometimes the evacuations take place

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involuntarily. It is not, however, in all cases that every symptom which we have enumerated occurs.

Begin by exposing the patient to the air without any fear of the cold, which can never be hurtful; remove all the clothes and place him upon his back, with the head and breast somewhat elevated, so as to promote respiration. On no account administer tobacco fumigations, or place the sufferer in a warm bed. Give a few small glasses of lemon-juice and water, or vinegar, weakened by the addition of three parts water; and sprinkle the body, particularly the face and breast, with cold vinegar; after this, rub the body with cloths steeped in vinegar, camphorated spirits of wine, or any other spirituous fluid; at the end of two or three minutes, wipe the parts which have been wetted with a warm towel, and after the interval of two or three minutes, recommence the sprinkling and rubbing with cold vinegar or spirits. These means ought to be continued with perseverance.

Irritate the sole of the foot, palm of the hand, and the whole course of the back with a hard brush. Administer a clyster with one part vinegar and two parts water; after a few minutes administer another, prepared with two or three ounces of common salt, and one ounce of Epsom salts, dissolved in water.

Irritate the nostrils by the vapour of burning matches, or of volatile alkali, taking care that the phial which contains the last article be not retained too long a time under the nose; or the nostrils may be irritated by a little roll of paper or a feather.

Inflate the lungs by the method described below.

If, notwithstanding the employment of these means, the patient continue in a state of insensibility; if he retain the natural heat; if his face be red, his lips swelled, and his eyes, as it were, starting from their sockets, he should be bled in the foot, or rather in the jugular vein. This is preferable to emetics, which often prove injurious. Emetics ought never to be given to persons in such a state, except to those who, after

having recovered their senses, suffer from excessive nausea, &c.; and, even then, it is far better to have recourse to purgatives, and irritating glysters prepared from common Epsom salts.

When the patient is restored to his senses, he may be put into a warm bed, in an apartment having the windows open. All useless persons should be excluded. He may then take a few spoonfuls of some good wine, such as Madeira or Sherry; the wine may be warmed and a little sugar added.

The succours which we have just advised should be administered *as soon as possible*, and be continued a long time, although the patient may *appear dead*. It has often happened that five or six hours have elapsed before persons have been restored from a state of apparent death; and it is also necessary to insist upon the introduction of air into the lungs.

The *methods of introducing air into the lungs*, under such circumstances, are as follow: the first and best is, after pressing the base of the tongue with the middle finger of the left hand, to introduce into the larynx, or windpipe, the small extremity of the *Laryngean Tube of CHAUSSIER*, which may be had at Mr. Evans's, No. 10, Old Change, St. Paul's Church Yard, London. This tube is conical, seven or eight inches in length, and is made either of silver or copper: its upper extremity is sufficiently wide to admit the nose of a pair of bellows, and is otherwise so constructed as to be best adapted for the purpose for which it is designed. When the tube is introduced into the larynx, press slightly upon it, so as to place the piece of leather affixed to its sides upon the opening of the larynx, then draw up the mucous matter which may be contained within the windpipe. A small pair of bellows, or a bladder of air, should then be attached to the upper extremity of the tube, and the air thrown into the lungs by small quantities at a time, and at short intervals, so as to imitate the process of respiration, at the same time let the chest and stomach be rubbed with a piece of flannel.

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In default of this instrument, air may be introduced into the lungs by the pipe of a pair of small bellows inserted into one of the nostrils, the other being kept firmly closed. It is still better to introduce a common *sound* into the larynx, by passing it through one of the nostrils, and then adapting the end of the bellows.

If these means of inflating the lungs cannot be accomplished, we must have recourse to the application of the mouth to that of the sufferer. A handkerchief may be used to render the operation less indelicate.

No incision ought to be made into the trachea, for experience has proved that it is of no use whatever.

CHARITY, in a confined sense, means the voluntary relief given by the rich to the poor; but in its most extensive and best signification it means, not only a general disposition to relieve the wants and distresses of others, but that moral habitude of the mind, which, upon all occasions, and at all times, prompts us not only to consult the good of our species, but the happiness and well-being of all animated nature. In this acceptance, it is synonymous with benevolence.

Charity, in its confined sense, is, notwithstanding its praiseworthiness, a secondary virtue: many misers have been charitable. The best charity is that which, whilst it carefully, and unostentatiously relieves immediate want, endeavours at the same time to alter the unfortunate circumstances which produce want and misery, so that every individual member of the community may be enabled, by moderate labour or exertion, to provide for his own exigencies without being obliged to have recourse to eleemosynary contribution; a state of dependence is derogatory and injurious to the human mind. It will be said such efforts do not rest with the individual: we know it. But if all the individuals of a state having the power, possessed the *will* for such charity, we should no longer hear of hunger and misery in our streets, nor of the overwhelming nature of those contribu-

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tions, levied under the name of **POOR-LAWS**. See **BENEVOLENCE** and **ALMS**.
Charlook. See **MUSTARD**.

Charr. See **SALMON**.

CHARRING of **POSTS**, in rural economy, the practice of reducing that part of the surface of posts which is to be put into the ground, to a state of charcoal, by which means they are rendered more durable: a very desirable operation, and much to be approved. The inside of casks for the purpose of containing water in long voyages, are also recommended to be charred, in order to preserve it sweet, which it is said the charring will effectually do. See **CHARCOAL**.

Charta, Magna. See **MAGNA CHARTA**.

CHATTELS, are all goods moveable and immoveable, except such as are in the nature of freehold, or parcel of it. They are either personal or real: *personal*, are such as gold, silver, plate, jewels, furniture, merchandize, corn sown on the ground, carts, implements of husbandry, coaches, cattle, &c. *Real*, are such as concern the realty; as terms for years, of land, &c.

CHECKS, or drafts on bankers, are made payable to bearer, which constitutes the characteristic difference between them and bills of exchange. They are equally negotiable with bills, although, strictly speaking, not due before payment is demanded. Checks payable on demand, or when no time of payment is expressed, are payable on presentment, without any indulgence of days of grace; but the presentment should be made within a *reasonable time* after the receipt, otherwise the party upon whom the check is drawn, will not be responsible, and the person from whom the holder received it will be discharged.

CHEESE, a kind of food well known, consisting of curd, or the coagulated albumen of milk in combination with various proportions of cream, or butter, pressed in a suitable apparatus, into thick tabular cakes, and afterwards dried by moderate exposure to air.

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The various qualities of cheese are principally caused by the greater or less degree of animal-oil, or butter, which it contains. That containing a large quantity of oil, becomes semi-fluid when heated, and is prone to decomposition, when a large quantity of ammonia is formed in it; whereas poor cheese, as it is called, consists of little else than curd, or albumen, and shrinks and dries when heated.

The best cheese is that which is of a dry, compact texture, without holes in it; of a whitish colour, and which, upon being rubbed between the finger and thumb, almost immediately becomes a soft, and somewhat greasy mass. It should also be of a moderate age: for neither very old decayed, nor decaying cheese, is wholesome; nor is that which is new, adhesive, and ropy, when heated by the fire, desirable. Nor is the *added* colour, either of the interior or exterior of cheese, a quality to be recommended: to say the least of them they are both useless; instances have been known, where red-lead has found its way into the annatto used for the interior colouring of this article of food: and lead, as every one knows, is highly poisonous. The taste of cheese, which depends principally upon the food which the cows eat, and sometimes on bad management, is by no means a criterion of its nutritive qualities.

Cheese has been decried by some writers on diet, as unsuitable for the human constitution; but, although to the valetudinarian and the delicate, it must be improper, yet to persons in sound health, and who have plenty of exercise in the open air, we doubt whether a more useful, or salutary diet could be adopted, at least for one, or occasionally even more meals of the day. We must not suffer an excess of refinement to persuade us that where moderate labour, which every person who values his health ought to endeavour to use, be adopted, an occasional meal, even of bread and cheese, is to be despised and rejected as unfit food, merely because fashion has been pampered into a dis-

like of such substantial and wholesome, although uninviting aliment.

CHEESE, THE METHOD OF MAKING. In the making of cheese, as well as butter, it is of great importance that the utensils and vessels are of a proper kind, and of suitable materials. The vessels for the reception of the milk, should be of the same kind as those mentioned under the article **BUTTER**. The vats in which the cheese is pressed are usually made of wood; the cloths of linen; the tubs large and convenient; and the press may be either hewn-stone lifted by a screw, or a large square box loaded with stones of sufficient weight for the purpose. Lead-vessels are sometimes used, upon which the vats containing the cheese are put to be pressed, but the use of *all* lead or brass vessels in the making of cheese ought to be avoided.

The best season for making cheese is during those months when the cows can be fed with grass; and that is from the beginning of May, till the end of September; or, in favourable seasons, the middle of October. Cheese is, however, frequently made throughout the year in many districts, but that made during the autumn and winter months is generally of inferior quality, and rarely becomes so compact and consistent as cheese made during the summer. It is possible, however, by proper management, to make good cheese at almost any season of the year.

The times of milking the cows are different in different districts, but in the summer months five o'clock in the morning, and five or six in the evening, are the usual and most convenient, as well as the most proper times. In milking the cows care should be taken that they are milked thoroughly, the last milk being the best, and also because the more completely the milk is taken from the udder, the less liable will the cow be to go dry, or become diseased. The expeditious cooling of the milk is also of importance in the summer season, and therefore the iron vessels, mentioned under the article **BUT-**

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ter, are of very great use in the facilitation of the process.

In order to make cheese of the best quality, and the greatest abundance, the cream should remain in the milk. If the whole milking be directly made use of in its simple state for cheese, it is called a *one-meal* cheese; but when two milkings are blended, or *two-meal* cheese is made, the quality of the milk differs considerably: in some cases the whole of the cream of the first meal is abstracted; and in all cases a certain portion. In some dairies, the milk of the first meal is set in the pans or other vessels as usual; and as it is the evening's milk which is commonly added to the succeeding morning's, the operation of cheese-making begins immediately after milking in the morning, about five or six o'clock.

The cream of the evening milk being skimmed off, the milk is put into the cheese-tub, reserving sometimes a half, sometimes a third, but more frequently a less quantity, to be applied as below. The milk reserved in any of these proportions, after being put into a pan and made scalding-hot, by placing the pan on a furnace, in a vessel of hot water, or on a suitable apparatus immediately over the fire, is one half of it poured into the cheese-tub among the cold milk, and the other into the pan with the cream. The cream and the hot-milk being intimately incorporated, the whole is poured into the cheese-tub, which, by this time, has received a great addition, if not the whole of the morning's milk, warm from the cows. Thus the different meals of milk form as it were a fluid of the same nature, equal both in quality and temperature: This re-union, or *melting the cream*, is probably the best method practised, but it is, we believe, not so effectual in making the best cheese, as that when the milk is entirely new.

Milk may be coagulated, or turned into a curdled state, by the application of any sort of acid, but the substance which is most commonly used in the making of cheese, is obtained from the *vell*, or stomach of a calf, prepared for

the purpose, and usually denominated *rennet*. See *VELL*. Rennet is prepared in various ways. The vell is taken out of the pickle in which it is usually kept, spread upon sticks, or some other proper convenience, and dried. A quart of spring-water is then to be poured on the vell, which, if cut into pieces, will yield its acid more readily. It should remain in the water twenty-four hours. The vell may be then taken out and put into another vessel, with about half the quantity of water, and allowed to remain for a like period. The first and second infusions must be now mixed together and strained through a sieve into a jar, or other vessel, to which must be added a considerable quantity of salt. The liquor is then fit for use, and requires no after management beyond that of taking off the scum which usually rises to the top, and of adding a little salt when that already in the jar is nearly dissolved. Half a pint of this preparation (wine-measure) is generally sufficient for coagulating such a quantity of milk as will make sixty pounds of cheese. When a portion is taken out, the liquor should be well stirred up.

The milk being in the state previously described, the annatto or colouring-matter, if the cheese is to be coloured, is to be now mixed with it; the usual method is to tie up the necessary quantity (about half an ounce for a cheese of sixty pounds) in a linen-rag, and to put it into about half a pint of warm water the preceding evening. In the morning, immediately before applying the rennet, the infusion of annatto is poured into the milk, and the mixture is then well strained, so as to make the milk and dye incorporate intimately. In other cases, the annatto is rubbed with a small portion of the milk upon a stone, and then added to the mass.

The degree of temperature which milk ought to possess, so as to be in the best possible condition for applying the rennet, is next to be considered. In this the practice of almost every particular dairy, differs from that of ano-

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ther, but that which is adopted in Cheshire, is, that the lowest degree of heat, when the rennet is applied, should be one half of that of the milk from the cow; the highest about twice the natural warmth. From this it is concluded, that by the time a large dairy of cows can be milked, and the milk put together, the dairy maid will not err materially by applying the rennet immediately afterwards. This rule is, however, very uncertain, and liable to exceptions, on account of the variation in the seasons, and the changes in the weather: accordingly, in the best dairy management, the heat of the milk before the rennet is applied, is raised or lowered by the addition of warm milk, or of cold water, to that degree which is found by experience most eligible. The frothy matter arising from pouring the new milk into the cheese-tub, is to be in all cases carefully skimmed off, and put into the cream-vessels. Practice appears, therefore, the only means by which the operator can acquire a proper knowledge of this branch of the business. The consequence of proper or improper conduct in this respect will soon be found: for when the coagulation is accelerated, or retarded, beyond the proper time, which in making a 60lb. cheese is reckoned an hour and a half, either by adding too much or too little rennet, or by applying it when the milk is too hot or too cold, not only the quantity of curd is diminished, but the quality in either case is materially affected. In the former case it becomes of a tough glaucous texture; in the latter too tender. After the rennet has been applied, the milk-tub must be covered up by a board, over which is laid a linen cloth, and having stood the usual time, the operator, on finding that the coagulation is completed, proceeds to separate the curds from the whey.

Although this operation may appear simple, there are few particulars in the art of cheese-making, in which greater difference is practised. In some dairies the curd is at first broken, or cut in various directions, with an instrument or knife made for the purpose, in order

to make the whey separate easily. After the first incision, some time is allowed for the broken curds to subside. The knife is then again used, and more freely than before. Having thoroughly broken the curds, and allowed some time for its subsiding, the whey is now to be taken off with the skimming dish. In some dairies, to facilitate the separation of the whey from the curds, some of it which first rises to the top is skimmed off, and being either heated or cooled, according to the state of the weather, and the required consistence of the curd, is again returned to the cheese-tub, and, after remaining a short time, is dipped off in the usual manner. All the whey which can be extracted without pressure, having been removed, and the cheese tub being raised at one side, the curds are collected into a mass, and at first pressed with the back of the skimming dish. When no more whey can be discharged by these means, others more violent must be adopted: the curd is cut with the knife as before, and then pressed as hard as possible with the hands; sometimes a considerable weight is applied. The curd having been thus separated from the whey, it is to be taken out into pans, and broken with the hands as fine as possible; in the course of doing which, a proper quantity of salt is scattered over the curd, and intimately mixed therewith. In some districts, when the curd is broken to the requisite fineness, it is again returned into the cheese-tub, where it is scalded by pouring over it a pailful of hot water, or of whey, or of whey and water mixed. The whole is then briskly stirred, and the curd is afterwards separated from the water, and pressed by the hands, or otherwise as before. When the curd is properly broken, rubbed, and salted, a proper cloth is spread over the cheese vat, and the curd, being packed into it, and covered up with a cloth, a board is laid over the vat, and a weight, heavy in proportion to the quantity of the curd, is placed upon it, by which means most of the remaining whey is pressed out.

Having made choice of a vat, or vats

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proportioned to the quantity of curd, so that the cheese when fully pressed shall neither over, nor under fill it, a cheese-cloth is spread loosely over the vat, into which the curd is to be re-broken, and every part to be again carefully squeezed by the hand; and the vat being filled, heaped up, the top rounded above, and the cloth folded over it, it is to be placed in the press. Where the cheeses are of a large size, holes are made in the vat, so that iron skewers may be thrust through them into the cheese in various directions, to give vent to the remaining whey; and the curd is afterwards again re-broken, and being put again in the vat, is managed in the same manner as before: but smaller cheese do not require these repeated breakings and pressings.

After the vat has been properly placed in the press, a suitable degree of pressure is applied, more or less, according to the sizes of the cheeses. In all large dairies, there are two or three presses varying in respect of power, weight, or pressure. The time the vat is first put into the press, till it is again taken out, does not generally exceed three hours. When taken out, the cheese is to be put into a vessel with warm or hot whey, where it is to remain for an hour or two, in order to harden its coat; it is then taken out, wiped dry, and after remaining for some time to cool, is covered with a clean dry cloth; and the vat being wiped dry, and the cheese replaced, it is again put into the press. It is continued in the press, having the cloths exchanged, and being turned in the vat twice a day, for two days, when it is finally removed: cloths of finer qualities are made use of at the different turnings, in order that as little impression as possible may be left on the cheese.

After the cheese is removed from the press, it is carried to the salting-house, and placed in the vat in a tub filled to a considerable depth with brine, in which it stands for several days, being regularly turned at least once every day. The vat is then removed from the brine tub, and the cheese being taken out, is

placed on the salting-bench, where it continues for eight or ten days, salt being carefully rubbed over the whole every day during that period. When the cheese is of a large size, it is commonly surrounded with a wooden hoop, or fillet of cloth, to prevent its separating; after it is sufficiently salted, it is washed in warm whey, well dried with a cloth, and placed on a drying-bench, where it remains an equal length of time before it is removed to the cheese-chamber. The practice of immersing the cheese in brine is, however, only adopted for the larger kind; simply rubbing salt on the surface, and turning them, being sufficient for small cheeses.

When the cheeses are removed to the cheese-room, they are soon afterwards smeared with fresh butter, (and if it be desired, a portion of red earth, usually Spanish brown, or Venetian red, is mixed with it.) They should be turned every day whilst in the dairyman's possession. Previously to smearing the cheeses with butter, they are usually scraped to take off the marks of the cloths, and any irregularities on their surface. In order to hasten the maturation and coating of the cheese, the temperature of the room should be uniform, and, in the winter, rather warm.

The produce of a dairy of cows, where the milk is converted into cheese, has been variously stated. In some districts *two hundred weight and a half* from each cow, is considered a good annual return; in others, the average is as high as *three*, and in Wiltshire from *three and a half to four hundred weight* is the usual quantity. From accurate calculations, repeatedly made, about fifteen gallons of milk are necessary to make about eleven pounds of two-meal cheese; and one gallon of milk produces a pound of curd. It is also the general experience of dairy-farmers, that the produce of from two and a half, to three and a half acres of land, is necessary to maintain one cow all the year round.

It is obvious, that in both the butter and cheese dairies, a great part of the profit must necessarily arise from the keeping and fattening of hogs. With

this view, the skim-milk, butter-milk, and cheese-why will be found best applicable to the support of sows with pigs, and to the rearing of young pigs. It is, however, a fact, that pork fattened upon the produce of dairies, is by far more tender than that fattened by corn; whether it be more nutritive, admits of some question.

We have thus given an outline of the best method of cheese making. Many peculiarities will, however, be found in the practice of this art, which we have neither room, nor do we think it necessary to enumerate. **STILTON CHEESE**, **CHESHIRE CHEESE**, **CHEDDER CHEESE**, **GLOUCESTER CHEESE**, **WILTSHIRE CHEESE**, **COTTENHAM CHEESE**, **SUFFOLK**, or **SKIM CHEESE**, **LINCOLNSHIRE CHEESE**, **PARMASAN CHEESE**, **GREEN SWISS CHEESE**, **DUTCH CHEESE**, and **WESTPHALIA CHEESE**, are some of the varieties with which the public are more or less acquainted. Perhaps upon the whole, the cheese made in the lowland districts of Somersetshire, including what is termed Cheddar cheese, will be found equal to any cheese in the kingdom, but the silly practice of colouring both the inside and the outside of such cheese, or indeed of any cheese, ought to be deprecated and discouraged.

In the *preservation of cheese*, the principal thing necessary is cleanliness, and a dry room, with a circulation of air, the cheese being regularly turned, and the floor constantly kept swept, to prevent the generation of mites. Various vegetables have been recommended for the destruction of these insects, among the rest twigs of birch; but we think them all inefficient; **CLEANLINESS**, as we have said before, is the best remedy.

CHEESE-RENNET, **YELLOW LADIES BED-STRAW**, or *Galium verum*, a native plant on the sides of fields and roads. The flowers of this plant coagulate boiling milk, and they are said to be employed for this purpose in making Cheshire cheese; boiled in alum-water, they tinge wool yellow, and the roots dye a fine red, and impart a simi-

lar colour to the bones of animals fed upon them.

The juice of this plant is said to be antiscorbutic.

CHELTENHAM WATER, a mineral saline water, found at the town of Cheltenham, in Gloucestershire. The greater part of the salts found in this water are of a purgative kind; it is also one of the strongest chalybeates. The iron is suspended entirely by the carbonic acid; of which gas the water contains about an eighth of its bulk; but from the abundance of earthy carbonates and oxyd of iron, not much of it is uncombined. This water is used with considerable benefit in a number of diseases, especially of the chronic kind, and many of them highly difficult of cure; in glandular obstructions, and especially those which affect the liver, and the organs connected with the functions of the alimentary canal; and in scorbutic eruptions of the skin. The season for drinking this water is during the summer months, and, if possible, it should be taken at the fountain head. The dose is usually half a pint, and if repeated three or four times a day, it has generally an aperient effect. It ought, however, to be taken with due precaution: for a long-continued course of evacuation, even from this chalybeate water, is not always attended with impunity.

CHEMICAL AFFINITY, or **ATTRACTION**, is that power which dissimilar substances possess, under certain circumstances, particularly when dissolved in water, or in a state of fluidity, of uniting with one another, and forming together new substances, in which the properties of both the dissimilar bodies are no longer perceived, but a new body is formed, not only very different, generally, in its sensible appearance, but also in its mechanical, medicinal, and other effects. Thus quick lime acts as a powerful caustic when applied to animal matter, and is partially soluble in water; phosphoric acid has an acid taste, and is very soluble in water; but phosphate of lime, the compound

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produced by the chemical combination of these substances is inert, insipid, and insoluble in water, and cannot again be resolved into lime and phosphoric acid by any mechanical power. Again, common chalk is a combination of lime and carbonic acid. If the chalk be placed in a red heat for some time, the carbonic acid will be disengaged, and the lime will become *caustic*; if carbonic acid, or water containing carbonic acid, be poured over the quick lime, the carbonic acid combines with it, and it becomes chalk again, and by such process, of course, it becomes as the chalk was before it was put in the fire, perfectly harmless. If to the carbonate of lime, a still stronger acid be added, such as vinegar, or the nitric, the muriatic, or sulphuric acid, &c. another combination takes place, the carbonic acid will be again disengaged, and acetate, nitrate, muriate, or sulphate of lime will be the result; depending of course upon which ever of the acids be added to it. The power, therefore, which such bodies possess of combining with one another, is called their *affinity*; and thus it is said, that the acetic acid, the nitric acid, &c. have a greater affinity for lime than the carbonic acid, meaning thereby, that if acetic or nitric acid, be added to carbonate of lime, the carbonic acid will be set free, and an acetate, or nitrate be formed with the lime in its stead. Upon a knowledge of the affinities of bodies does our progress in chemistry, medicine, and the arts, essentially depend. We have in different parts of our work, pointed out the impropriety of mixing one medicine with another, in consequence of their different affinities, and it is also by a knowledge of affinities, that the effect of many poisons may be counteracted, when taken into the stomach. *Corrosive sublimate*, or muriate of quicksilver, is decomposed by pure, or even common magnesia, in consequence of the muriatic acid having a greater affinity for magnesia than for quicksilver. Innumerable instances of this kind may be mentioned; but these we presume will be sufficient to explain to the general

reader the nature of affinity, and the necessity of his becoming acquainted with this important subject. See the next article, and also, **ACIDS, ARSENIC, CORROSIVE SUBLIMATE, and POISONS.**

CHEMISTRY is the science which treats of those events or changes in natural bodies by which new bodies are composed, and compound ones divided: its principal object is to ascertain the principles or elements of which bodies are composed, and the laws by which the simple atoms of matter unite together and form compounds.

It is scarcely possible to name a thing in the natural world to which chemistry does not, either directly or indirectly, apply. Heat, light, air, electricity, the phenomena of the seasons, the different climates, the sea, mountains, volcanoes, mines, have all an intimate connexion with this, the first of all sciences. The boiling of a potato, the roasting of a piece of beef, the baking of a pie, or of a loaf of bread; the brewing of malt-liquors, and the making of cider and wines, are equally objects of chemistry.

The honour of laying the foundation of the present science of chemistry belongs to John Joachim Becher, a German, who wrote in 1669. Stahl, and a variety of other active and ingenious persons during the eighteenth century, shed a lustre on this science which can never be forgotten. The discoveries of Black, Scheele, Priestley, Cavendish, Lavoisier, Berthollet, Morveau, Fourcroy, and many others, however, paved the way for that broad diffusion of chemical light which now so generally illuminates the scientific horizon.

The most splendid of these discoveries, and, perhaps, the most important, is that of *vital air*, or **OXYGENOUS GAS**, by Dr. Priestley, to which he was accidentally led in August, 1774, by which the composition of our atmosphere was discovered, and, in fact, a complete revolution ultimately effected in the whole science and nomenclature of chemistry.

Till this time, chemistry consisted of little more than a huge mass of disjointed facts, held together by no order, nor was it capable of any satisfactory

elucidation. The discovery of oxygen operated as an animating principle to the whole, and every part of the science teemed at once with life. Did a metal, red-lead for instance, acquire an increase of weight in its conversion from the metallic state, it was found that an absorption of oxygen gave it the increased weight; the same was the case with what was called the *calcination* of quicksilver; and, in both instances, in reducing the metals to their metallic state again, the same weight of oxygen was obtained from them as had given them the additional weight in the state of what was then called *calces*: now, of course, *oxides*. The synthetical and analytical composition of water was soon afterwards made, and the discovery of hydrogen, and other gases, gave rise to the novel and surprising machines called balloons, and adventurous persons ascended in the air, to the astonishment of the uninformed and the uninitiated.

As the facts accumulated in this science, previously to the discovery of oxygen, were in confusion, so also were the names, so that it became difficult to understand it or to study it, either with satisfaction or effect. In the year 1787, Messrs. De MORVEAU, LAVOISIER, BERTHOLLET, and De FOURCROY, four illustrious French chemists, presented to the scientific world a system of nomenclature, which for a long time had to contend with the prejudices in favour of established usage, the talents of a Priestley and a Keir, and the pertinacity of the multitude; but such has been the omnipotence of truth, that the new nomenclature has effectually superseded the old farrago: and a knowledge of chemistry now bids fair to become as common, and to be taught in the schools, as easily as the most ordinary science. Nor have the present generation been wanting in great names who have with equal, if not superior steps, trod onward in the paths of this science, exploring many a hidden treasure, and administering to the wants, the conveniences, and the comforts of our species. The illustrious DAVY in this galaxy stands foremost, whether we consider him as

the discoverer of the metals barium, potassium, and sodium, by the application of the stupendous powers of galvanism, or the inventor of that useful instrument, the SAFETY LAMP. Mr. BRANDE, the present professor at the Royal Institution, must not be forgotten, whose MANUAL OF CHEMISTRY we most cordially recommend, as illustrative of the principal facts in this interesting science, and of whose ability, as a philosopher and teacher, we can scarcely speak too highly. Other names might be mentioned who have added more or less to this interesting science, by their writings, by their experiments, or by their lectures: ACCUM, HATCHET, PARKES, THOMSON, &c. &c. See AIR, ATMOSPHERE, HYDROGEN, OXYGEN, and WATER.

CHERRY, or *Prunus cerasus*, an elegant, as well as a useful tree; it differs from the plum, in having the stone nearly globular, with the kernel of the same shape. A native of Asia and Europe.

There are several varieties of the cherry-tree usually cultivated in gardens. They are all propagated by budding, or grafting the several kinds into stocks of the black, or wild red cherries, which are stronger, shorter, and of a longer duration than any of the garden kinds. The stones of these two kinds are sown in a bed of light sandy earth, in autumn, and the young stocks produced from them are to remain where they rise till the second autumn after their sowing; when, in October, they should be planted out into a rich earth, at three feet distance from row to row, and at ten inches distance in the rows. The second year after planting out they will be fit to bud, if intended for dwarfs; but if intended for standards, they will not be tall enough till the fourth year: for they should be budded, or grafted, six feet from the ground. The budding is usually performed in summer, (see BUDDING) and the head of the stock is to be cut off the beginning of March following, about six inches above the bud; and, if the bud has shot well, and there is any fear of

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its being displaced by wind, it must be gently tied up to the part of the stock left above it. The autumn afterwards they will be fit to be removed, and be set where they are to remain ; or they may be left two years.

Many persons, when they plant these trees in their places, lop off a great part of their heads, but this is an injury which often kills them ; and when they escape, they seldom get over it for four or five years. If the trees are intended for walls, it is advisable to plant dwarfs between the standards, that these may cover the lower part of the wall, while the others spread over the upper part ; and when the dwarfs rise to fill the whole wall, the standards should be taken entirely away. When the trees are taken from the nursery, the dead fibres of the roots must be carefully taken off, and the upper part of the stock, which is above the bud, must be cut off close down to the back part of it : the bud must be placed directly from the wall. Cherry-trees thrive best on a dry hazly loam ; in a gravelly soil they are very subject to blights, and seldom stand long good. They should be placed at fourteen feet asunder, with a standard between each two. In pruning these trees, their shoots should never be shortened ; for they mostly produce their fruit from their extreme part. All the fore-right shoots are to be displaced, and the others trained horizontally ; where there is a vacancy in the wall, the branches being shortened, will throw up a shoot or two to fill it.

The principal cherries found in our gardens are the Black-heart, White-heart, Flemish, or early Kentish, Courone, Hertfordshire black, and May-duke ; and the Morella cherry, which ripens late.

Ripe cherries, eaten in moderate quantities, and not of too sweet a kind, are agreeable and pleasant to most stomachs ; but, eaten in large quantities, particularly if the stones be swallowed, they are injurious ; and have often produced mischievous and alarming effects.

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The wood of the cherry-tree is hard and tough, and is used by turners in the manufacture of chairs, and stained to imitate mahogany. The gum obtained from the cherry-tree is of the same quality as, and equal to Gum Arabic.

A preparation used to be kept in the shops under the name of **BLACK CHERRY-WATER** ; but it is a very dangerous medicine : that which is usually sold under this name, is generally distilled from almond-cake ; and it is now known that a water distilled from any of the kernels of the fruits of the plum and almond kinds, including cherries, is more or less poisonous, in consequence of its containing a portion of **PRUSSIC ACID**. See **ALMONDS** and **LAUREL WATER**.

Cherry-Bird. See **PLUM**.

CHERRY - BRANDY, a drink made of brandy with the addition of cherries. The cherries commonly used for this purpose are of the black kind : with these, a bottle being half-filled, is filled up with brandy or spirits. The whole must now and then be shaken up, and in a month's time it will be fit for use. To sweeten it, and improve the flavour, some persons put in sugar, and a quantity of raspberries.

Cherry-Laurel. See **LAUREL**.

CHERRY, WINTER, or *Physalis*, a genus of plants containing seventeen species, natives of the south of Europe, both the Indies, and America. Several of these species are cultivated for ornament in our gardens. The berries of the *Physalis Alkekengi*, or common winter cherry, have been recommended in dropsical and calculous disorders, but are now discarded from medical practice. Most of the species may be propagated by seeds, and are for the most part hardy. Some of them are annual, the greater part perennial. The common winter cherry is most readily propagated by a separation of the roots.

CHERVIL, or *Cherophyllum*, a genus of plants containing eleven species, almost all of them natives of Europe : two common to our own country.

The *Sylvestre*, Wild Chervil, Cow Parsley, or Cow-weed Chervil, called

also *Cicutaria*, Bastard Hemlock, or Wild Cicely, is found frequently in orchards, and under trees. It has a woolly striated stem, erect umbels, and white flowers, which blow in the month of May. The roots of this plant, when eaten by mistake, have been found poisonous.

The *Temulentum*, or rough Cow-Parsley, or rough Chervil, grows in hedges, and flowers in July and August.

CHEST, in commerce, an uncertain quantity of various commodities. Thus a chest of congou or souchong tea is about 84lbs, of Bohea about 300lbs; of sugar various weights; of glass from 2 to 300 cubic feet; of soap about 2 cwt; of indigo from 1½ to 2 cwt.

CHEST, in anatomy, that part of the body between the neck and the belly, containing the heart, lungs, &c. See BREAST and THORAX.

CHESTNUT, or CHESNUT, or *Fagus Castanea*, a tree, supposed by some to be indigenous to this country, is, undoubtedly, a native of Italy and the southern parts of Europe. It grows to an enormous size, and is remarkable for its longevity. The largest in the known world grow on the sides of Mount Etna: some are to be found of great size in England. As an ornament, the chesnut has great beauty, though it yields in elegance to the beech, and in dignity to the oak. As a timber, it is often employed as a substitute for oak; and where no great dependence is to be placed on its strength, it answers extremely well. It is chiefly valuable, however, as staves for liquor casks, and as underwood for hop-poles. Its fruit is relished by many animals, and may be employed as a substitute for flour. As an article of food, chesnuts are in some estimation; but we cannot recommend them.

The wood of chesnut, it appears, by some late experiments made in America, contains twice as much tannin as cleansed oak-bark, and six-sevenths as much colouring matter as logwood. Leather tanned with it is said to be superior to that tanned with oak-bark. Ink made with it is admirable; and, in dyeing,

it is said to have a greater affinity for wool than either galls or sumach, and causing, therefore, a more permanent colour.

It is propagated by planting the nuts in February, in beds of fresh undunged earth. The best nuts for sowing are those brought from Portugal and Spain. This tree, however, ripens its fruit very well in this country; which is as good for sowing, when the trees are designed either for timber or beauty, as the foreign nuts. They may be raised either in nurseries, or in the places where they are to stand. If in a nursery, the spot should be chosen on poor ground, and trenches should be opened about the middle of February, four inches deep and six asunder. In these the chesnuts should be planted regularly, one every four inches, with the eye uppermost; and the earth be drawn over them. Half a dozen of these trenches should be made, and then a space left by way of an alley, to get between in order to clean them; then another bed of six rows; and thus proceeding till a sufficient quantity be planted. Care must be taken to preserve them from vermin. The plants will appear in two months, and should then be kept clean from weeds, and suffered to stand two years; at the end of which time they should be taken up, the long tap-root cut off, care being taken not to injure the other roots, and planted at two feet distance, in rows a yard asunder. The best time for removing them is March, when the side shoots must be carefully trimmed off, that they may grow upright and straight. When they have stood four years in this place, they may be transplanted to the spots where they are to be stationary.

CHESTNUT, THE HORSE, or *Æsculus*, a genus containing three species, all of which have been cultivated in our own country for nearly a century: the *hippocastanum*, or common horse-chesnut, of elegant shape and flower, but unsightly after the fall of the flower; its nuts are useful as food for sheep, deer, poultry, &c; the *pavia*, or scarlet horse-chesnut; and the *flava*, or yel-

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low horse-chesnut, both of which are chiefly propagated for the beauty of their corols, or flowers.

CHEWING, or mastication, is that motion of the under jaw by which solid food taken into the mouth is broken and divided with the teeth into small particles, and being at the same time mixed with the saliva, is accommodated more effectually to the purposes of digestion.

It is scarcely necessary to add that upon the due mastication of food, depends in a great measure its nutritive property. Unchewed and hasty meals are highly improper and should be always avoided.

CHICK, or **CHICKEN**, the young of the gallinaceous order of birds, especially of the common hen.

Chickens have been and are generally considered a delicate and nutritious food for invalids; and *chicken-broth* has been also very commonly recommended. Where a slight stimulus of animal food is wanting, these answer the purpose very well; but powerful nutrition cannot be obtained from either chickens or chicken-broth; recourse must be had in such case to full-grown animals, particularly those which produce beef and mutton.

Chickens are hatched in Egypt in ovens, without the aid of the hen; and some experiments have been made in this country to hatch them and rear them in the same way; but, from every thing which we can learn, there is no method so good for obtaining chickens as the natural one, by which, in this country, they are at present obtained. See **EGG**, and **HEN**.

CHICKEN-POX, or **SWINE-POX**, an eruptive and in general a very slight disease; and it is attended with so little danger that it would scarcely merit any notice, were it not apt to be confounded with the small-pox, and thus give occasion to an opinion that a person might have the small-pox twice in his life; or it may deceive into a false security those who have never had the small-pox, and make them believe that they are safe, when in reality they are not.

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This eruption breaks out in many without any illness or previous sign: in others it is preceded by a little degree of chilliness, lassitude, cough, broken sleep, wandering pains, loss of appetite, and feverish state for three days. In some patients the chicken-pox make their first appearance on the back. Most of them are of the common size of the small-pox, but some are less. They are neither confluent nor very numerous. Rarely more than a dozen in the face, and two hundred over the rest of the body.

On the first day of the eruption they are reddish; on the second day there is at the top of most of them a very small bladder, about the size of a millet seed; sometimes full of a watery and colourless, sometimes a yellowish liquor. On the second day, or at furthest on the third day, from the beginning of the eruption, the pocks which are not broken seem arrived at full maturity; and those which are fullest of the yellow liquor very much resemble the appearance of the genuine small-pox on the fifth or sixth day. Most of the eruptions, however, are generally, from the tender nature of the cuticle, broken either on the first day, or on the day after, either by the accidental rubbing of the clothes, or by the patient's hand, to allay the attendant itching. A thin scab is then formed at the top of the pock, and the swelling of the other part abates, without its ever being turned into pus, as it is in the small-pox. On the fifth day of the eruption they are almost all dried and covered with a slight crust. The inflammation of the pocks is small: and scarcely any marks or pitting are left by them.

The patients scarcely suffer any thing throughout the whole progress of the disease, except a languor of strength, spirits, and appetite, originating, perhaps, more in confinement than disease. This disease appears to be occasionally infectious. Remedies are, however, not likely to be much wanted in a disease attended with so little inconvenience, and which in so short a time is certainly cured of itself. At the commencement

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of the eruption every thing of a heating nature should be avoided, and the bowels should be gently opened.

The principal marks by which the chicken-pox may be distinguished from the small-pox are : The appearance, on the second or third day from the commencement of the eruption, of a little bladder full of serum upon the top of the pock ; and the crust which covers the pocks on the fifth day : at which time those of the small-pox are not at the height of their suppuration.

CHICKWEED, or *Alsine*, a genus of plants consisting of three species, natives of Europe. One, the *media*, is a very troublesome weed met with too frequently in our own gardens. The leaves may, however, be boiled and eaten as spinach ; they form also an emollient poultice.

CHILBLAIN, a well-known troublesome affection of the hands, sometimes, but of the feet very often, during the winter season, occasioned, usually, by suddenly exposing the hands or feet to the fire, or to a hot hearth, or plunging them in hot water when they are very cold.

Children are most frequently troubled with chilblains ; so also are delicate females, exposed to the vicissitudes of the weather. The prevention of this complaint is of more importance than the cure ; we therefore wish to impress upon those persons having the care of children, or who are liable to chilblains themselves, the importance of avoiding the immediate application of heat to warm them : on the contrary, to plunge the feet, or hands, which are very cold, into cold water, salt and water, or other cold liquid, and rubbing them with flannel, are some of the best means of restoring gradually the lost heat. And, in the winter season, to avoid above all things the habitual washing in warm or hot water when the limbs are cold. Placing the feet upon a hot hearth, or holding the feet or hands near a scorching fire, is also a certain and effectual method of obtaining these unpleasant visitants. Children, and others liable to chilblains, ought to wear warm wool-

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en socks, gloves, &c. and to avoid being wet in the feet.

When, however, these troublesome swellings have taken place, washing them with camphorated spirits of wine, or oil of turpentine, is the best ; avoiding all extremes, and keeping the feet or hands warm, but not hot. Should the chilblain break it must be treated as other ulcers arising from loss of action, or mortification of the part. In general, yellow basilicon mixed with red precipitate, as directed under the article **BASILICON**, will be found the best possible application to these kind of ulcers. After the wound has become healthy by this application, it may be healed by the common calamine cerate ; indeed, in some slight ulcerations the application of the calamine cerate only has effected a cure.

CHILD, the male or female offspring of male and female parents.

The duties of children to their parents are of the most powerful and imperative nature. The sympathies which are excited by a knowledge of the relation in which parents and their children stand, and the mutual assistance and happiness which they confer upon each other, added to that sense of dependence which the child necessarily feels in regard to the parent, are so powerful, that positive laws do not seem, nor are they in general necessary, to enforce the duties either of the parent or the child.

Children, besides the deference which it becomes them to pay to their parents, ought not only to contribute to their support when they need assistance, but to contribute also, as much as in them lies, to their mental comforts and happiness.

Our laws, however, compel children, if they be able, to provide for their parents when reduced to poverty. See **PARENT**.

For the management of children in the early stages of life, see **INFANCY**.

CHILL, in farriery, a disease somewhat like the acute rheumatism, to which the human body is liable. It is either general or local, and always attended with more or less fever. When

CHIMNEY

a horse has been heated by violent exercise, or fatigued by a long journey, and in this state plunged into a river, a very common practice among post-boys, or tied up in a current of air and washed with cold water, or suffered to stand in the cold, wind, or rain, he will be found, after being in the stable a few hours, almost incapable of moving. The breathing is generally quickened, the pulse also is often very quick, and the membranes of the eyes unusually red. Other symptoms sometimes accompany this complaint: the muscles of the loins, hind legs, and the fet, are variously affected; in some instances by severe travelling or hunting, and afterwards cooling the feet suddenly, the hoof has separated from the *sensible* foot. In this complaint, if severe, bleed to the extent of five or six quarts, and unless the bowels are open or loose, give a mild purgative. If the blood which has been drawn have a thick coat of buff, and the pulse and other symptoms do not abate in a few hours, the bleeding ought to be repeated. When the muscles of the loins are affected, a fresh sheep or lamb's skin should be placed on them, the flesh side under. In a less violent chill, the same treatment is proper, but it will not be necessary to carry the bleeding so far. When the foot alone is affected, bleeding and purging are proper; and in every degree of this disease it is advisable to take off the fore shoes, pare the soles, and wrap the feet in large brun poultices, for the purpose of keeping them moist.

CHIMNEY, in building, is that part of a house where the fire is made, and which is provided with an aperture or funnel, to carry off the smoke. The parts of a chimney are, the jambs, or sides; the back; the mantle-piece, resting on the jambs; the chimney-piece, or moulding on the front of the jambs and over the mantle-piece; and the hearth, or fire-place.

The most common, as well as the most convenient dimensions for the chimneys of sitting rooms are the following; width from three feet to three

feet and a half; height of the mantle-piece three feet from the floor; depth, eighteen inches; the aperture for smoke, after being gradually contracted, ought to be fourteen inches by twelve throughout; and, where these dimensions are complied with, no building or tree higher than the chimney in the immediate neighbourhood, and the grate *properly set*, and no irregular draught caused in the room by a variety of doors or other impediments, the chimney will not fail to carry up the smoke well.

The cure of smokey chimneys has engaged the attention of both scientific and ignorant persons, and a great deal has been said and written upon the subject, we think to very little purpose indeed, considering the state of other arts among us. A good deal has been said too of the *rarefaction* of the air, but we think unnecessarily. It is well known that the combustion of fire-wood and coal disengages a variety of gases lighter than atmospheric air, and that these gases ascend the chimney as a matter of course; at the same time, and at the very place where these gases are disengaged is disengaged also a quantity of dense black matter, which, if the current of air passing up the chimney be not powerful enough to carry up, descends from under the mantle-piece, and pours out into the room, and the fire-place is then said to smoke. Now, suppose the aperture under such circumstances to be three feet by one foot and a half; we have in general nothing more to do to cure this smoky chimney, than to reduce the size of the aperture every way, and that too as nearly as possible or convenient to the very spot where the heavy smoke becomes first disengaged from the combustible materials: for by contracting the column of air passing up the chimney, we increase its power for taking up heavy smoke. Upon this principle we affirm it is that all chimneys built as above will most certainly carry their smoke up well. And upon this principle also it is that most chimneys which smoke may be cured; that is, by the contraction of

the space at the exit of the smoke from the fire. Upon this principle too it is that register-grates are constructed.

For the cure of smoky chimneys not depending upon the *contraction* of the draught, other means must be sought. In general, we may be sure that a chimney *below* other buildings, trees, or even a steep hill in the immediate neighbourhood, will smoke in certain directions of the wind; and although, in some cases, such smoking may be remedied, in others it is absolutely irremediable. To prevent also the smoking of large and open fire-places, frequently found in the kitchens of farm-houses, and where many doors open into the kitchen, producing a counter draught to the chimney, is generally difficult, and in most cases impossible, unless a contraction of the fire-place be submitted to, and the mantle-piece lowered, in which case such chimneys carry smoke as well as others in the warm sitting-rooms of towns.

In building chimneys it ought to be an invariable rule, never to let one communicate with or discharge itself into another: from this circumstance alone, many chimneys smoke, and not unfrequently disastrous fires have happened.

Chimneys may be cleaned from soot by a rope twice the length of the chimney, to the middle of which is to be tied a bush of broom, or furze, &c., sufficiently large to fill the chimney. One end of the rope is to be put down the chimney, and if there be any windings in it, a bullet, or other weight, must be tied to the extremity of the rope, and the woody end of the bush introduced after the rope has descended into the chamber, where a person must pull it downward. By the elasticity of its twigs, the bush sweeps the sides of the chimney as it descends, and carries the soot with it. Should it be necessary to draw the brush up again, the person below must turn the latter so as to send the wood-end uppermost, before he gives notice to the assistant at the top to pull it up. Chimneys thus cleaned are less liable to be out of repair than those swept by children.

But, however, superior and more convenient methods for sweeping chimneys may now be adopted. See the next article.

Chimneys sometimes smoke from their being too small, in this case nothing but enlarging them can cure them. In other cases they smoke merely from a collection of soot, the removal of which obviates the inconvenience. See FIRE-PLACE.

CHIMNEY-SWEEPER, one whose trade is to clear foul chimneys from soot.

The evils of this disagreeable and unwholesome occupation to those engaged in it, and particularly to boys, are generally acknowledged, and of late years the public attention has been directed to this subject, and premiums offered for the discovery of methods which might be substituted for a practice so offensive to humanity. A bill was also brought into Parliament by the benevolent Mr. Bennett, in the year 1819, to prevent the sweeping of chimneys by climbing-boys, and it passed the House of Commons, but was thrown out in the Lords. It appears, however, by a report of Colonel Stephenson, Surveyor General of the Board of Works, that all chimneys, or flues, may be comprised in four classes. The first, and most numerous, are those carried up in a perpendicular stack, the only bend in the flues being just sufficient to clear the opening of the flue above. The second, far less numerous, are those in which the fire-place is in a wall, not continued higher than the next floor, and turning off with one bend, to a partition-wall, in which the shaft, or flue, is continued to the top. The third, still less numerous, are those in which the shaft is at some distance from the fire-place, having, at least, one angle in the plan, and which of necessity forms two bends in the elevation. The fourth class, which are a very small number, are those having more than one angle, and being, for a part of the length, horizontal. The proportion of the different flues in 1800, is 910 of the first class; 50 of the second; 30 of the third; and 10 of the fourth.

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For the first class, the machines now in use are quite sufficient; they are also competent to sweep part of the second class; for the remainder, the ball and brush, with very few exceptions, are perfectly efficient. In the third class, when the ascent is at all preserved, the ball and brush still act effectually; as they will also in the fourth class, when there are not parts entirely level. The remainder of the fourth class comprehend those flues which have several bends, and are frequently horizontal: in these cases it is alike necessary to let in registers or doors, whether they are swept by boys or machines, there being no other security for the safety of the boys; and these being made, present the means of sweeping by a common machine.

The machines now very generally in use are, SMART'S, BEAN'S, MUMFORD'S, SKINNER'S, LEE'S, and the Bath. The ball for conducting the brush is said to be susceptible of improvement, which, by the ingenuity of mechanical skill, it will, no doubt, soon obtain.

We trust, therefore, that the public will no longer consider the use of climbing-boys for sweeping chimneys necessary: and if master chimney-sweepers will persist in employing them, they should be discountenanced by the public at large: this being the only method now left to rescue that unfortunate portion of the community from so degrading, injurious, and humiliating an occupation.

The trade of a chimney-sweeper, relative to the taking of apprentices, is regulated by act of Parliament; by which no master can have more than six apprentices at one time. And every master is to cause his name and place of abode to be put upon a brass-plate, and to be fixed upon the front of a leathern cap, which he is to provide for each apprentice, who shall wear the same when on duty; on pain of forfeiting for every such apprentice, above such number, or without having such cap, not exceeding 10l., nor less than 5l.

China. See PORCELAIN.

CHINA-ASTER, CHINESE STAR-
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WORT, or *Aster Chinensis*, an annual flower, containing many varieties, much cultivated in gardens. It is propagated in precisely the same way as the AFRICAN MARIGOLD, which see.

Chin-cough. See HOOPING-COUGH.

CHLORINE, a gas discovered by Scheele, and by him called *dephlogisticated muriatic acid*. The term *oxymuriatic acid*, was afterwards applied to it by the French chemists.

Chlorine is a permanently elastic gaseous fluid; it has a pungent disagreeable smell, and is highly injurious when respired, even largely diluted with atmospheric air. Its colour is a greenish yellow, whence its name.

To obtain this gas, a mixture of black oxide of manganese and muriatic acid, may be heated over a lamp in a glass retort. It is soon copiously evolved, and may be conveniently collected over warm-water; as it is absorbed by cold-water, it cannot long be retained over that fluid. Its specific gravity, when compared with hydrogen, is as 35.5 to 1. At the temperature of 60, water dissolves two volumes of chlorine. The solution is of a pale yellow colour, has an astringent, nauseous taste, and destroys vegetable colours; hence its use in BLEACHING; (see that article) although the gas itself, when perfectly free from moisture, has scarcely any action upon them. Many bodies, such as phosphorus, and several of the metals, are spontaneously ignited by chlorine, and burn in it with much brilliancy; in which cases binary compounds result, some of which, like those of oxygen, are possessed of acid properties, others are not acid, and such compounds with oxygen, being called *oxides*, those which chlorine forms may be termed *chlorides*. See CALOMEL and CORROSIVE SUBLIMATE.

Chlorine and hydrogen mixed in equal volumes, and exposed to light, combine and produce a sour compound, commonly called *muriatic acid gas*: this gas is greedily absorbed by water, which takes up 480 times its bulk, and has its specific gravity increased from 1, to 1,210. Thus dissolved in water,

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it forms the *liquid muriatic acid*, or *spirit of salt* of the shops. See **MURIATIC ACID**.

CHLOROSIS, or Green-sickness. This disease usually attacks females a little after the time of puberty, and first shows itself by symptoms of dyspepsia. But a distinguishing symptom is, that the appetite is entirely vitiated; and the patient will eat lime, chalk, ashes, salt, &c., very greedily; while at the same time there is not only a total inappetence for proper food, but it will even excite nausea and vomiting. In the beginning of the disease the urine is pale and afterwards turbid; the face becomes pale, and then assumes a greenish colour; sometimes it is livid or yellow; the eyes are sunk and have a livid circle round them: the lips lose their fine red colour; the pulse is quick, weak, and low, though the heat is little short of a fever, but the veins are scarcely filled; the feet are frequently cold, swell at night, and the whole body seems covered with a soft swelling; the breathing is difficult; nor is the mind free from affection as well as the body: it becomes irritated by the slightest causes; and sometimes the patient loves solitude, and becomes sad and thoughtful. There is a retention of the menses throughout the disorder; and at last, if the patient be not relieved, the bad symptoms increasing, dropsy, atrophy, and death succeed.

Chlorosis arises often from the same causes which bring on dyspepsia, and hypochondriasis; but it very frequently also arises from love, and other passions; or at least, is considerably increased by them. Although it does not generally prove fatal, a certain cure cannot be obtained without the appearance of the menses.

The remedies for it must be, in general, the same as in dyspepsia, and hypochondriasis; only in chlorosis, stronger purgatives may be made use of. Aloetics are especially useful. And it has not without reason been concluded, that in females whose affections are strongly attached to a beloved object, marriage promises the most effectual cure.

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The bowels ought, by all means, to be kept regularly open, or somewhat lax.

Bathing may be also sometimes serviceable in this complaint: but surely cold-bathing, as recommended by some medical men, does not promise a cure. We advise the warm, or tepid bath, as far preferable.

The compound pills of iron may be taken with advantage; see that article. And slight doses of calomel may be occasionally given with the aloetic purgatives.

Attention to food and drink in this complaint is of the greatest importance. What is said under the articles **ALIMENT**, **APPETITE**, and **DYSPEPSIA**, should be carefully attended to. Exercise on horseback, if the patient can bear it, is of the first importance; and clear country air, cheerful company, and other agreeable stimulants, should be, in the kindest way, administered. All sedentary occupations, and long continuance in one position, are highly improper, and must be avoided.

Choak-damp. See **CARBONIC ACID**.

CHOCOLATE, a well-known kind of cake prepared principally of the nuts of the cacao-tree. See **CACAO**.

CHOICE, in morals, that faculty of the understanding by which, when objects are presented to it, one is selected from the rest, as most worthy, or most desirable to be followed or obtained; and is followed or obtained accordingly. This power of choosing has been often confounded with the term *free-will*, a term which has been productive of an infinity of disputes, to very little purpose.

CHOLERA MORBUS. This disease shows itself by excessive vomiting and purging of bilious matter, with violent pain, inflation, and distention of the belly. Sometimes the patients fall into universal convulsions; and sometimes they are affected with violent spasms in particular parts of the body. There is a great thirst, a small and unequal pulse, cold sweats, fainting, coldness of the extremities, and hicough; and death frequently ensues in twenty-four hours.

Those who have been rendered weak, or irritable, by a hot, or long-continued summer, or by living in a warm climate, or in putrid vapour, are peculiarly liable to this disease.

It is produced by cold, by putrid vapour, or arises as a partial evacuation in fever or from purging, if it has continued long, or happened in a habit predisposed; or it begins with phlegmonous inflammation of the intestines.

In this disease, as much bile is in the alimentary canal, particularly the stomach, the first object is to counteract its influence, and to promote an easy discharge of it. It will be, therefore, necessary to give the patient a large quantity of warm water, or very weak broth, in order to cleanse the stomach, and also to inject the same by way of clyster, till the pains begin to abate a little. After this, a large dose of opium is to be given in some convenient vehicle, and repeated as there is occasion. But if the vomiting and purging have continued for a long time before any remedies have been given, immediate recourse must be had to opium, or rather laudanum, because the patient will be too much exhausted to bear any further evacuations. Sometimes, the propensity to vomit is so strong that nothing will be retained, and the laudanum itself thrown up as soon as swallowed. If this should be the case, a strong decoction of oat-bread, toasted as brown as coffee, has been recommended. An infusion of mint leaves, or good simple mint-water, is also said to be very efficacious in the same case. But, however, we believe, that a tea-cupful of strong beef-tea taken cold occasionally, will be found superior to all these medicaments, and even should the first tea-cupful be thrown up, the like dose may be repeated in the course of a quarter of an hour, when it will most probably remain: where, however, inflammation is present, beef-tea must not be taken, as, by it, the inflammatory symptoms will be increased.

After the violence of the disease is overcome, the vegetable bitters, such as columbo-root, a strong infusion of cha-

momile flowers, &c. may be given with good effect; and care must be taken to avoid every kind of flatulent food: the intestines, if not naturally open, must be kept rather so, by some gentle laxatives, such as rhubarb, &c. See *DIARRHŒA* and *VOMITING*.

CHRISTMAS, a festival of the christian church, observed on the 25th of December, in memory of the nativity of Jesus Christ. Christmas is also one of the divisions of the year, usually called quarter days, for the payment of rent, &c.

Christopher, the Herb. See *BANBERBIS*.

CHROME, or *Chromium*, a metal discovered by Vauquelin in 1797. Its colour resembles that of iron, and its specific gravity is 5.9. It is brittle and difficult of fusion.

When chrome is exposed to the action of heat and air it combines with oxygen, and a green protoxide is obtained. This oxide easily dissolves in acids.

Chromic Acid is most easily procured by the decomposition of native *Chromate of Lead*. It may also be procured from native *Chromate of Iron*.

CHROME, YELLOW, or *Chromate of Lead*, has been lately brought into use in this country. It was first found in its natural state in Siberia, but, on account of its scarcity and high price, its use was confined to portrait painters. But it is now produced artificially by Dr. Bollman of Chelsea, and has been introduced with great success among coach-painters and house-painters throughout the kingdom. Besides the extreme richness and beauty of its colour, this pigment is said to possess so much body, that one pound of it will go as far as four pounds of patent yellow. It is so fine that it requires no laborious grinding, but will spread readily under the brush, and may be laid on with varnish; it is not poisonous, like king's yellow; it will stand better than most of the other pigments in use, sulphuretted hydrogen gas only impairing its beauty; against which it may be protected by varnish. It makes also a

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beautiful green with Prussian blue. Care should be taken to obtain the pigment pure, as it is apt to be adulterated with white lead, or patent yellow.

CHRONIC DISEASES are those which are of long continuance, and mostly without fever. The term *chronic* is used in opposition to *acute*. See **ASTHMA, APPETITE BAD, DYSPEPSIA, HYPOCHONDRIASIS, &c. &c.**

CHRONOLOGY is that science which treats of time, consisting not only of the proper measurement of time, and the adjustment of its several divisions, but also of fixing the dates of the various events recorded in history, and arranging them according to the several divisions of time, in the order in which they happened. No person ought to be ignorant of the leading events in chronology: for the general reader we give the following, as the greater epochs in the chronology of history.

Before Christ.

- 4004 Creation of the world.
- 2348 The deluge.
- 2000 The birth of Abraham.
- 1728 Joseph sold into Egypt.
- 1689 The death of Jacob.
- 1571 The birth of Moses.
- 1451 The Israelites under Joshua pass the river Jordan.
- 1263 The Argonautic expedition undertaken.
- 1184 Troy taken.
- 1095 Saul anointed King over the Israelites.
- 1070 Athens governed by archons.
- 1048 Jerusalem taken by David.
- 1044 The migration of the Ionic colonies from Greece.
- 1004 Solomon's dedication of the temple.
- 926 The birth of Lycurgus.
- 907 Homer supposed to have flourished.
- 814 The kingdom of Macedon begins.
- 757 Isaiah prophesied above 60 years.
- 753 The æra of the building of Rome.
- 721 Samaria taken: The first eclipse of the moon upon record.
- 677 The combat of the Horatii and Curiatii.
- 658 Byzantium built.

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- 627 Jeremiah prophesies.
- 623 Draco establishes his laws at Athens.
- 605 The beginning of the captivity.
- 593 Ezekiel prophesies.
- 587 Jerusalem taken by Nebuchadnezzar.
- 558 Daniel prophesies.
- 539 Pythagoras flourishes.
- 536 Cyrus issues an edict for the return of the Jews.
- 525 Cambyzes conquers Egypt.
- 520 Confucius flourishes.
- 515 The temple at Jerusalem finished.
- 509 The consular government begins at Rome.
- 490 The battle of Marathon.
- 451 The laws of the twelve tables compiled.
- 445 Herodotus reads his history at Athens.
- 431 About this time the history of the Old Testament finishes.
- 401 The retreat of the 10,000 Greeks under Xenophon. The 30 tyrants expelled from Athens by Thrasybulus.
- 390 Plato made his first voyage into Sicily.
- 336 Philip, king of Macedon, killed by Pausanias.
- 327 Alexander's expedition into India.
- 323 The death of Alexander.
- 322 Demosthenes put to death by Antipater.
- 284 The septuagint translation of the Old Testament thought to have been made.
- 260 The Carthaginians defeated at sea by the Romans.
- 224 The Colossus of Rhodes thrown down by an earthquake.
- 218 The second Punic war begins. Hannibal passes the Alps.
- 190 The first Roman army enters Asia.
- 170 Paper invented in China.
- 167 The first library erected at Rome.
- 146 Carthage destroyed by Publius Scipio.
- 137 Ptolemy Physcon began a new restoration of learning at Alexandria.
- 116 Cleopatra assumes the government of Egypt.

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- 07 Cicero born.
- 00 The birth of Julius Cæsar.
- 55 Cæsar's first expedition against Britain.
- 44 Cæsar assassinated.
- 40 Jerusalem occupied by Antigonus.
- 31 The battle of Actium. Marc Antony and Cleopatra defeated.
- 8 Augustus corrects the calendar.
- 4 The birth of Jesus Christ: four years before the common æra.
- Christian Æra.*
- After Christ.*
- 14 Augustus dies at Nola.
- 26 St. John the Baptist enters on his ministry.
- 33 The crucifixion of Jesus Christ.
- 36 St. Paul converted.
- 37 The death of Tiberius.
- 37 St. Matthew writes his gospel.
- 4 St. Mark wrote his gospel.
- 51 Caractacus carried in chains to Rome.
- 54 The death of Claudius.
- 59 Nero puts his mother to death.
- 62 St. Paul sent in bonds to Rome.
- 64 The first persecution against the Christians.
- 67 St. Peter and St. Paul put to death.
- 70 Titus destroys Jerusalem.
- 102 Pliny, the younger, sends Trajan his celebrated account of the christians.
- 130 Adrian rebuilds Jerusalem.
- 135 Conclusion of the Jewish war, when the Jews were all banished Judea.
- 146 The worship of Serapis introduced at Rome.
- 152 A great pestilence in the Roman empire.
- 269 Zenobia takes possession of Egypt.
- 286 The Roman empire attacked by the northern nations.
- 303 The tenth persecution against the christians.
- 319 Constantine begins to favour the christians.
- 325 The first general council of Nice.
- 340 The death of Constantine the Great.
- 364 The Roman empire divided into the eastern and western.
- 410 Rome taken and plundered by Alaric
- 420 The kingdom of the French begins upon the lower Rhine.
- 426 The Romans leave Britain.
- 449 The Saxons arrive in Britain.
- 493 The kingdom of Italy passes from the Heruli to the Ostro-Goths.
- 469 Clovis baptized, and christianity embraced in France.
- 506 The Jewish talmud published.
- 510 Paris made the capital of the French dominions.
- 511 Arthur defeats the Saxons in the battle of Badon-hill.
- 516 The computing of time by the christian era introduced by Dionysius.
- 529 The code of Justinian published.
- 533 The digest of Justinian published.
- 557 The manufacture of silk introduced from India into Europe.
- 558 A terrible plague all over Europe, Asia, and Africa, which continued nearly fifty years.
- 597 Augustin, the monk, arrives in England.
- 606 The power of the pope begins.
- 622 The Hegira of Mahomet begins.
- 637 Jerusalem taken by the Saracens.
- 640 Alexandria taken by the Saracens, and the great library there burnt.
- 709 Ina, king of Wessex, publishes his laws.
- 748 The computing of years from the birth of Christ began to be used in histories about this time.
- 800 The emperors of the West, or of Germany begin.
- 828 The heptarchy of England united under Egbert, who became the first English monarch.
- 867 The Danes conquer Northumberland.
- 872 Alfred defeated the Danes.
- 878 Alfred conceals himself in Athelney.
- 886 The university of Oxford said to have been founded.
- 941 Arithmetic brought into Europe.
- 987 The third race of the French kings begins under Hugh Capet.
- 1013 The Danes, under Sweno, get possession of England.
- 1057 Malcolm III. kills Macbeth.

CHRONOLOGY

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| 1065 Jérusalem taken by the Turks from the Saracens. | 1619 Harvey discovers the circulation of the blood. |
| 1066 The conquest of England under William, Duke of Normandy. | 1620 Copper money first introduced into England. |
| 1080 The domesday book, or survey compiled. | 1649 King Charles I. beheaded. |
| 1096 The first crusade to the Holy Land. | 1660 The restoration of Charles II. |
| 1110 Learning revived at the University of Cambridge. | 1662 The Royal Society established. |
| 1116 First Parliament of Lords and Commons. | 1666 The great fire of London. |
| 1140 King Stephen defeated, and taken prisoner at the battle of Lincoln. | 1680 A great comet appeared. |
| 1154 The party names of Guelfs and Gibbelines begin. | 1683 Lord Russel beheaded. |
| 1172 Henry II. takes possession of Ireland. | 1685 The Duke of Monmouth beheaded for rebellion. |
| 1215 Magna Charta signed by King John. | 1688 The revolution in England: the accession of William and Mary to the throne. |
| 1273 The empire of the present Austrian family begins. | 1707 The union of the Parliaments of England and Scotland. |
| 1283 Wales conquered by Edward I. | 1720 The South Sea scheme begins. |
| 1293 The regular succession of the English Parliaments begins. | 1752 The new style introduced into Great Britain. |
| 1302 Mariner's compass invented. | 1760 George II. died, and was succeeded by his grandson George III. |
| 1307 The beginning of the Swiss cantons. | 1775 The American war begun. |
| 1330 Gunpowder first discovered. | 1781 Herschell discovered a new planet. |
| 1340 The order of the garter instituted. | 1783 Preliminaries of a general peace signed: America declared independent. |
| 1352 The Turks enter Europe. | 1789 The revolution in France begins. |
| 1381 Wat Tyler's insurrection. | 1792 France declared a republic. |
| 1414 The council of Constance. | 1793 Louis XVI. beheaded. |
| 1440 The art of printing discovered. | 1799 Buonaparte made first consul of France. |
| 1492 America discovered by Colon, or Columbus, a Genoese. | 1801 Union of the Parliaments of Great Britain and Ireland. |
| 1497 Vasco de Gama, a Portuguese, first sailed round the Cape of Good Hope to the East Indies. | 1802 A general peace in Europe. |
| 1517 The reformation begun by Luther. | 1803 War between England and France. France formed into an empire. Buonaparte crowned emperor. |
| 1534 The reformation takes place in England. | 1800 Mr. Pitt and Mr. Fox died. |
| 1572 The massacre of Paris. | 1812 The Prince of Wales assumed full powers as Regent. |
| 1583 Pope Gregory introduces the new style. | 1814 Severe frost, fair on the Thames. Buonaparte abdicated: Louis XVIII. ascends the throne of France. A general peace. |
| 1587 Mary, Queen of Scots, beheaded. | 1815 Buonaparte returned to France and seized again the government. The Battle of Waterloo. Buonaparte exiled to St. Helena. |
| 1588 The destruction of the Spanish Armada. | 1817 The Princess Charlotte of Wales died. |
| 1603 Union of the crowns of England and Scotland in the person of James I. | 1818 Queen Charlotte died. |
| 1603 The invention of the telescope. | 1819 Riot at Manchester. |

1820 His Majesty King George III. died ; succeeded by his son, for many years Prince Regent, now his Majesty George IV.

CHRYsalis, or **AURELIA**, in natural history a state of rest, and seeming insensibility, which butterflies, moths, and several other kinds of insects pass through before they arrive at their winged, or most perfect state. The figure of the chrysalis generally approaches to that of a cone ; or at least, the hinder part of it is in this shape, and the creature while in this state, seems to have neither legs nor wings ; nor has it any power of walking ; it takes no nourishment ; its posterior part is all that seems animated, this having a power of giving itself some motions. The external covering of the chrysalis is usually smooth and glossy ; a few have hairs ; and others are rough, and as if it were shagreened all over. See **BUTTERFLY** and **CATERPILLAR**.

CHRYsANTHEMUM, or **Ox-eye daisy**. A genus of plants containing twenty-six species, chiefly European, though a few are natives of the Cape, and the East Indies. Of these some have white rays, some yellow, and some doubtful. The *incanum*, a native of the Cape, with three cleft downy leaves, is a shrubby plant, as is also the *pinnatifidum*, of Madeira. The rest are all herbaceous. Many of the species of chrysanthemums are annual plants with yellow flowers, and are cultivated in our gardens for ornament. They are obtained from seeds, and are easily propagated, if sown in a hot-bed, or even a warm border in the spring, and afterwards transplanted where they are to remain.

Those indigenous to our own country, are the *leucanthemum*, found in our pastures, and often denominated *bellus major*, or great Ox-eye daisy ; and the *segetum* found in our corn fields, neither of which are of any importance.

Chub. See **CARP**.

CHURN, a vessel in which butter by long and constant agitation, is sepa-

rated from the serous part of milk. See **BUTTER**.

CHYLE, the milk-like liquor observed some hours after eating in the lacteal vessels of the mesentery, and in the thoracic duct. It is separated by digestion from the chyme.

The chief use of the chyle, is to supply the matter from which the blood and other fluids of the body are prepared ; from which fluids the solid parts are formed. Hence the importance of proper food and drink for the production of this important fluid in the animal economy. The chyle secreted in the breasts of the female, of the human species, under the name of milk, forms the most excellent nutriment of all aliments for new-born infants. See **CHYME**, **THORACIC DUCT**, and **DIGESTION**.

CHYME, the ingested mass of food, forming a homogeneous pap-like substance, and after continuing some time in the stomach, passes into the duodenum ; and from which the chyle is prepared in the small intestines, by the admixture of the bile, &c.

CICATRIX, a scar ; the mark left after a wound is healed.

CICELY, **CHERVIL**, or *Scandix*, a genus of plants containing ten species, scattered over the globe. Three indigenous to our own hedges and corn-fields. The following are most worthy of notice : the *odorata*, or Sweet cicely, found wild in our hedges ; the *pecten*, Venus's comb, or Shepherd's needle, a corn-field flower of our own country ; and the *cerefolium*, or Garden chervil, with white flowers ; a native of the Levant. It is used as a culinary plant in winter and spring.

Cicuta. See **HEMLOCK**.

CIDER, or **CYDER**, the juice of apples expressed, and afterwards allowed to ferment, so as to become a vinous liquor, in which state it is more or less acid and intoxicating.

In order to make good cider, it is essential that the fruit should be of the proper kind, and also that it should be perfectly ripe. The apples which ripen early, that is, before the middle of September, do not often make good cider.

CIDER

Those which ripen after that period, and before the middle of November, on the trees, will be found generally to make good cider; and those which ripen afterwards, provided they are kept till they are ripe, will not, perhaps, be found inferior. In order to know when the apples on a tree are ripe, it is only necessary to shake it moderately, and if the apples fall in tolerable profusion, we may be assured that they have obtained all the succour from the tree which they are capable of receiving, and the whole may be then shaken down, although it is a more common practice to let them fall gradually off the trees, and to pick them up every day: this practice is, upon the whole, the best, for many reasons. It frequently happens, with some kind of apples, notwithstanding they fall off the tree, that they require to be kept for some time afterwards, in order to acquire that mellow ripeness necessary for making the best cider; and *all kinds of apples* should be kept as long as they can in general be, without decaying, in order, not only that they may all become equally ripe, but that they may part with a considerable portion of the water which they contain, and which they will not fail to do, provided they are kept in a dry airy place, covered from the immediate contact of the weather. Placing them in large heaps in the open air, is not so well, and causing them to sweat, as it is termed, to benefit them, is an entire mistake.

The kinds of apples which make good cider are various: many persons who make the best cider, do not separate the different kinds, but mix them altogether, others scrupulously keep them apart. Of one thing we may be assured, that the acid taste of apples is by no means a criterion of their powers for making good cider: and it not unfrequently happens that a bitter and ill-tasted, nay even sometimes a sour apple, will make better cider than one which is sweet, and of a pleasant taste. Having been practically concerned in making cider, we are enabled to speak with precision on this head. The

weight of the cider immediately after it is expressed, is however an excellent criterion of its probable future strength: hence we may be quite sure, that no cider, a wine pint of which, when expressed from the apple, does not weigh seventeen ounces avoirdupois, or more, can be strong cider; nor is it probable that it will keep over the first summer after it is made. Generally speaking, good cider will weigh, when recently expressed, from seventeen ounces and a quarter, to seventeen ounces and a half. The heavier it is, the better it must be, as its weight is a sure indication of the quantity of saccharine matter which it contains, and which in the fermentation is of course converted into alcohol.

The fruit being thus matured, every utensil, such as the mill, press, tubs, casks, and pails, should be properly cleaned, and made ready by soaking, and washing for their various uses.

Several methods are practised for converting apples into *pommage*, or *pum-mace*; but the two most in use are a bruising-stone, with a circular trough, and the apple mill. The best internal construction of a mill, seems to be that which has two pairs of rollers, (many mills have only one pair,) the upper pair being stuck with cogs and dags, and the under pair being of very hard wood, turned smooth, and worked with cogs only. The upper rollers grinding the apples to a coarse pulp or pommage, and the under ones squeezing it to a very fine pulp. The apples being, by either of the foregoing methods, properly bruised, the pommage is carried to the press, and a square heap, or cheese as it is called, is made thereof by alternate layers of it, and clean wheat straw. Or else by putting the pommage into hair bags, or hair cloths made for the purpose. If straw be used, it is of importance that it should be sweet, and perfectly free from mustiness. The cheese after standing for some time, is to be pressed down gradually, and at length the greatest possible pressure is applied, till all the juice is pressed out. The juice is then to be strained through a sieve, and put at once into the cask des-

lined to receive it. The cask should be full, or within an inch or two, in order that when the fermentation takes place, the feculent matter floating at the top may flow out at the bung-hole. As soon as the fermentation is sufficiently completed to permit a bung in the hole, it should be put in at first slightly, and after a few weeks more tight, *nor should the liquor be at all disturbed*, till it is wanted to be drunk: for if these directions be followed, and the fruit ripe and good, the best cider will be obtained by this very simple process.

A variety of forms have been made public, for making or improving this simple beverage; and, indeed, almost every farmer in the cider counties has his own particular method; but as almost all of them have been adopted on erroneous principles, it is no wonder that when attempted to be practised by others, they should so often fail. It can not be too strongly impressed upon the cider maker, that the very nature of the expressed juice of the apples induces it, when at rest, and in almost every temperature above the freezing point, to go into the vinous fermentation, and therefore to expect to have at once a strong and a sweet liquor is impossible: the sugar becoming decomposed during the fermentation forms alcohol; and if an attempt be made to prevent such decomposition by racking, or other art, the moment the temperature is increased, the fermentation again commences. The sweet ciders met with in London, and other cities, are of this description: but most of these are no more like the genuine cider of the cider counties, than raisin wine made in England is like Madeira.

We may just mention that, from experiments which we have made, any addition of sugar to good cider, immediately on its being pressed, does not improve the taste of the liquor; it certainly improves its strength; we think, however, that an addition of four ounces or more of sugar, to every gallon of poor cider, that is one which weighs less than seventeen ounces to the pint, will be of advantage to it, provided it be mixed

with it at the time it is made, not afterwards.

Cider is said by some persons not to be so nutritious as malt liquor, and perhaps it is not: we think, however, that for labouring men, and for a summer beverage, it is far superior to any kind of malt liquor whatever; its acid is manifestly advantageous in the quenching of thirst. We have seen, also, very good effects from moderate doses of good cider in the secondary fever, and debility after the measles in children.

CINCHONA, the botanical name now applied to the different species of PERUVIAN BARK, which see.

CINNABAR, a composition of quicksilver and sulphur, principally used in painting. Cinnabar is found in the shops of two kinds, *native* and *factitious*. Native cinnabar is not so good a colour as the factitious. They are both SULPHURETS of QUICKSILVER, and by which name they ought to be called. The factitious cinnabar, finely levigated, forms the VERMILION of the shops. See that article, and also QUICKSILVER.

Cinnabar is found in the state of ore in almost all mercurial mines, sometimes in veins, sometimes disseminated, sometimes in grains, and sometimes crystallized. It is a heavy mineral, varying in specific gravity from 5,419, to 10,285; brittle, and of a deep red colour when it is in the lump. It is easily sublimed without decomposition; in the humid way it is scarcely possible to decompose it but by the aid of fire; it yields its sulphur to the fixed alkalies, lime, other earths, and several of the metals: of these iron is the most convenient, affording the means of readily procuring the mercury in a state of purity, while the sulphur combines with the iron.

CINNAMON. For a particular account of this spice, and the tree which produces it, see BAY.

CINQUEFOIL, or *Potentilla*, called also sometimes wild Tansey, and Silver-weed; a genus of plants containing forty-one species; a few American, the rest European plants. The principal are the following:

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The *Fruticosa*, or Shrubby cinquefoil, with an erect stem, three or four feet high, and flowers of a bright yellow or golden colour; highly ornamental. A native of Oeland, England, and Siberia. It flowers with us in June and July, and, like the plane-trees, has the extraordinary property of exfoliating its cuticle every year.

The *Fragarioides*, or Strawberry-leaved cinquefoil, a native of Siberia. The *Recta*, or Upright cinquefoil; a native of the South of Europe. The *Montpeliensis*, Montpellier cinquefoil; a native of Montpellier. The *Grandiflora*, Great flowered cinquefoil; a native of Switzerland and Siberia.

The first sort may be propagated by suckers, layers, and cuttings; all the rest succeed best by parting the roots, or sowing the seeds.

Cinquefoil *Mursh.* See MARSH CINQUEFOIL.

Circulation of the blood. See ANATOMY, HEART, LUNGS, &c.

CIRCUMSTANCES, in morals, the whole circle of surrounding causes which form the human character. It is not till lately that circumstances have been considered, or admitted as being of such great importance in morals and the social well being of man; but it is now beginning to be perceived, that the mind of man may be moulded in innumerable ways by education; and that, although the natural capacity is important, the acquired capacity is yet more so; that, in short, men become virtuous or vicious according to the circumstances which surround them; and that, consequently, under good and well-regulated governments, the causes of crime, vice, and misery, being removed, crime, vice, and misery must cease: a truth, at once both great and consolatory.

CISTERNS, are vessels employed for the reception of rain or other water, either under or above ground, for domestic or other purposes.

Cisterns, of whatever material composed, but more especially if of lead, ought to be cleaned *very often*, not only from the dirt deposited by the water,

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but also from any noxious matter produced by the oxidation of the lead, which is more or less constantly going on on the surface of that metal, and against the noxious effects of which cleanliness is one of the best preventives. See WATER.

CISTUS, or ROCK ROSE, a genus of plants containing seventy-eight species, chiefly natives of Spain and the Mediterranean coasts.

The *Creticus*, so called from its frequency in the isle of Crete, produces from its leaves the *Gum Ladanum* of the shops.

This genus, throughout almost the whole of its species, affords elegant ornaments to our gardens, as well in regard to their foliage, which is for the most part evergreen, and beautifully variegated in shades, as the flowers, which are chiefly white, purple, and yellow. These flowers last only a single day, but there is a perpetual succession of new ones from the same plant for six weeks or two months. The greater part of them may be propagated either from seeds or cuttings, and thrive best on a dry soil. The *Helianthemum*, or dwarf Cistus, is the species most frequently met with in our gardens; it requires no other care than to be kept clear from weeds.

CITRATES, salts formed by the union of the citric acid with different bases. See LEMON JUICE, and the next article.

CITRIC ACID, or ACID OF LEMONS, so called, because it is obtained in greater abundance from the juice of that fruit, than from any other substance. It may, however, be procured from oranges, and many other fruits. When pure this acid is in colourless, alum-shaped crystals, either pyramidal or rhomboidal: its taste is so intensely sour, as even to be painful, but when diluted it is exceedingly pleasant. It acts upon iron, zinc, tin, lead, and various other metals.

Citric acid is obtained from lemon-juice thus: boil the expressed juice for a few minutes, and when cold strain it through fine linen; then add powdered chalk as long as it produces efferves-

CITRON

cence; heat the mixture, and strain as before; a quantity of citrate of lime remains upon the strainer, which having been washed with cold water, is to be put into a mixture of sulphuric acid, with twenty parts of water: the proportion of the acid may be about equal to that of the chalk employed. In the course of twenty-four hours the citrate of lime will be decomposed, and sulphate of lime will be formed, which is to be separated by filtration. The filtered liquor, by careful evaporation, furnishes crystallized citric acid. The preparation of this acid is carried on by a few manufacturers in the large way. In different states of purity it is employed by the calico printers, and used for domestic consumption. A gallon of lemon juice yields about eight ounces of the crystallized acid.

Lemon juice is partially clarified in order to preserve it in various ways. But the best way is to evaporate it considerably by a gentle heat, after it has been partially clarified by rest. It will then keep in bottles for many years without alteration. Care must be taken to use no metallic vessels in these operations. See LEMON JUICE.

CITRON, or *Citrus*, the citron, orange, and lemon-tree. A genus, containing six species, all natives of Asia.

The *Angulata*, with small glutinous fruit, angular.

The *Japonica*, fruit the size of a cherry.

The *Decumana*, or Shaddock; fruit small.

The *Trifoliata*, a thorny shrub, with fruit resembling a medlar.

The *Medica*, Citron-tree. The Lemon-tree is but a variety of this species; there are also several other varieties. See LEMON and LIME.

The *Aurantium*, or Orange-tree, the chief varieties of which are:

The Seville orange, the hardiest and most beautiful of the entire species. Even in our country it grows strong and easily, and produces excellent fruit when properly managed; fruit sour.

The China orange; the leaves of this variety are less, and the tree smaller

than the former. Fruit smooth, thin-skinned, and sweet.

Forbidden fruit; in appearance of the tree resembles the last; but the ripe fruit is larger and oblong.

The Horned orange.

The Hermaphrodite orange, with fruit intermixing the appearance of the *Medica*, and the *Aurantium*.

The Dwarf, or Nutmeg orange, with a long stem, and small bushy head, growing out two or three feet high, with very small fruit. See ORANGE.

The seeds from rotten lemons, or citrons, are generally preferred for raising stocks for budding, whether for oranges or lemons. But a better way, is to purchase such trees as are brought from Italy every year. These are as large when we receive them, as those of our own produce would be in ten or twenty years' growth; and though they have but small heads, they will be brought to have very good ones in three years, and to produce very fine fruit. Of such trees, those which have two buds in the stock, are preferable to those which have only one; the straightness of the stem, freshness of the branches, and plumpness of the bark, are greatly to be regarded. Such being purchased, each tree is to be set in a tub of water, with its head and half its trunk above the surface; they are to remain in the water three days, then to be taken out, the roots picked and brushed clean, the tops of the branches cut off, and then to be planted singly in pots, just large enough to contain their roots, in a mixture of fresh earth and rotten cow-dung. These are to be placed in a moderately hot tanner's bark bed, and some pot sherds must be always put at the bottom of the pots, to keep their holes from being stopped, to give a free passage to the water. They must be moderately watered at proper times, and by the month of June they will shoot out pretty long shoots, which must be stopped in order to produce the lateral branches. They must be now hardened by degrees, and in the middle of July brought into the open air in a warm situation, defended from winds, and the too great heat of

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the sun. In September they must be removed into the green-house, and watered gently during the winter. The next summer the branches must be stopped from growing to their length, in order to furnish a good head; and they must be frequently watered. After this they will require no further management than to be new potted every year; which should be done in April, and the mixture of cow-dung and fresh earth prepared for it a year before hand. The roots should be soaked a quarter of an hour in water, and afterwards scrubbed very clean before they are put into the new pots.

If old orange-trees have bad heads, they should be almost entirely cut off, and then proceeded with in the same manner as trees brought from Italy.

All orange-trees require frequent, but not large waterings. There must always be a hole for the water to run off at the bottom of the pot or tub. They must have as much fresh air in winter as the season will allow; and they should not be placed too near each other in the green-house. In the summer they should be placed where they may have the morning and evening sun, without too much wind; and they should not be housed till October.

- *Cives*. See GARLIC.

- *Civet*. See VIVERRA.

- **CLARET**, a name which the French give to such of their red wines as are not of a deep or high colour. According to *Mr. BRANDE*, the average quantity of alcohol in claret, is 15.10 parts in one hundred.

- **CLARIFICATION**, the process of clearing or fining any fluid from all heterogeneous matter, or feculence. It is performed either by heat, or by the addition of some substance, which will unite with, and precipitate, or raise to the surface, the matter which makes the liquor turbid.

The substances usually employed are the whites of eggs, blood, and isinglass: the two first are generally used for such liquors as are clarified while hot; the last for such as are clarified in the cold, such as wines, &c. The whites of eggs

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are beaten up into a froth, and mixed with the liquor, when they unite with the impure matters which float in it; and on becoming hard by the heat, they carry them up to the surface in the form of scum, not dissoluble in the liquid. Blood operates in the same manner; it is used in the refining of sugar, and in purifying the brine from which salt is made. Great quantities of isinglass are used in clarifying turbid wines; some throw into the cask an entire piece, which dissolves by degrees, and forms a skum upon the surface, which at length subsiding, carries down with it the feculent matter floating in the wine; others dissolve the isinglass previously, and diffuse it through the liquor, by stirring or rolling the cask. For the clearing malt liquor, particularly beer, there are several methods; such as casting into it a quantity of fixed nitre, or whites of eggs made into balls, with a little flour and isinglass; or by adding to it during the time of its fermentation a small portion of ardent spirit. See BREWING.

Clary. See SAGE.

CLASSIFICATION, in a general sense, denotes the arrangement or assortment of various objects into several classes, denoted by appellatives, which are called *genus*, *species*, *variety*, &c. Such arrangements are more or less necessary in every art and science: and although the trouble of learning new names is always great to the uninitiated, and to those who have been accustomed to think in a certain way, yet the facility with which the knowledge of a science is conveyed by proper classification, is so obvious, that there can be no question of its utility, provided such classification be correct and consistent with the nature and qualities of the things represented by it.

CLAVICLE, or **COLLAR-BONE**, in anatomy a bone shaped like the letter S, situated obliquely upon the upper part of the chest, and connecting the shoulderblade and the humerus to the thorax.

CLAY, or **ARGILLA**, a compact, heavy, stiff, viscid, and ductile earth, when moist, and when mixed with water does not readily subside. Naturalists

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have divided this genus into thirty species, of which the following are the chief.

The *Porcellana*, or Porcelain earth, or clay found in Cornwall, Japan, China, Saxony, and various parts of Europe. It is principally used in the manufacture of china ware. Contains alumine 60, silex 20, air and water 12.

The *Lithomarga*, Lithomarge, or potter's clay of Thomson. Several varieties found in various parts of the world; sometimes compact, sometimes in powder of various colours. Alters its colour by fire, becomes very hard, and melts into a red porous mass. It is entirely miscible with water, and when duly moistened very ductile; highly useful in china, and other potteries.

The *Leucargilla*, Pipe clay, potter's clay, found very generally in Europe. Colour varying from pure white to black, often variegated. Exposed to heat it becomes blackish; by continued heat, it turns a pure white. It is used for tobacco pipes, and various vessels.

The *Fullonica*, or Fuller's earth, found in Britain, Sweden, Saxony, and Portugal. Its colour brown, or grey, with generally a shade of green. Does not adhere to the tongue; feels greasy. From the great avidity with which it absorbs oil, it is much used by fullers to take grease and oil out of wool, and woollen cloth.

The *Lemnia*, or Lemmain earth, found in the isle of Lemnos, and in Silesia. Formerly used as a bole in medicine.

The *Communis*, or common clay. Several varieties, found in almost every part of the globe. Colour bluish yellow, grey, smoke-colour, dull bluish, rarely green, or flesh-colour, and impregnated with a greater or less degree of silica.

The *Cimolia* or Cimolite, found in the isle of Argentiens, in the Archipelago, where it is used for whitening stuffs. Colour pearl-grey; becomes white before the blow-pipe.

The *Rubrica*, or Reddle, found in Siberia, and various parts of Europe, generally among iron ore, with which it commonly abounds. Colour dark co-

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chineal, red, or intermediate, between brick and blood red.

The *Lutea*, or yellow Ochre, found near Witsau. Feels smooth, or somewhat greasy. Contains alumine 50; oxyd of iron 40; water, acidulated with sulphuric acid, 10.

The two last abound in great plenty in the Mendip hills in Somersetshire. See OCHRE and SPANISH BROWN.

The *Arvensis*, or Field-clay Loam. Ash-coloured, forming small clods when moistened, splitting into large clefts while drying, becoming, at last, powdery and vitrifying in the fire. Found every where in cultivated lands.

Clay, besides its various uses in the arts, has lately been used with success, after being burnt, as a manure. The reader, who is desirous of further particulars upon this subject, may consult a paper in the 36th vol. of the transactions of the Society of Arts, by Dr. Cartwright.

Pipe-clay and fuller's-earth are prohibited from being exported, except to any place in his Majesty's possession.

Clay-Lands. See HUSBANDRY and SOIL.

Cleaning of Clothes, &c. See SOAPING.

CLEANLINESS, of the person and of the dress, is not only becoming in our intercourse with society, but is absolutely necessary if we desire that invaluable blessing, good health. With this view, therefore, frequent ablution of the face, hands, and feet is indispensable, and the whole body occasionally. Persons who perspire much, and the surface of whose skin is commonly moist, will require little more for their feet and body than warm, luke-warm, or cold water, according to the season of the year, and friction with a hard and dry linen cloth: there is, however, no objection to the use of soap, unless some particular diseases of the skin should be present; in which case, a mild soap, which contains terebinthine matter, should be avoided. The linen, or cotton, which is worn next the skin should be changed at least twice a week; stockings oftener; if the feet

perspire much, every day. Nor do we think it advisable to wear the same woollen clothes continually, and for a long period: they should be left off occasionally, and exposed to a current of dry air. Packing them into a close chest, or drawers, is highly improper. It can be scarcely necessary to add, that the teeth, mouth, ears, and nails ought to be freed from every kind of sordes daily; and immediately on rising from bed. Nothing contributes more to the health and comfortable feeling through the day than such purifying processes and ablutions.

Cleavers. See CLIVERS.

CLEMATIS, Virgin's Bower, or Traveller's Toy, a genus of plants consisting of twenty-four species, some climbing, others erect, scattered over the globe, yet chiefly natives of the south of Europe. Those most worthy of note are the following:

The *Vitalba*, with pinnate leaves, climbing, by the petioles, up whatever stock or stem it lies within reach of. It is the only species indigenous to our own country, and is found wild in our hedges.

The *Flammula*, a native of the south of France. This is also a climbing plant.

The *Erecta*, or Upright Virgin's bower, a native of the south of Europe. The leaves and flowers of this plant, called by some persons *Flammula Jovis*, are extremely acrid; the former, when fresh, raising blisters on the part to which they are applied. It was introduced by Stœrk, as being efficacious in cancerous, venereal, and other malignant ulcers, inveterate itch, &c.; but it is not heard of in the modern medical practice of this country.

Many of the species of the clematis are ornamental climbing plants, and as such are found in our gardens. Some of them may be propagated by cuttings.

CLERGY, BENEFIT OF, an ancient privilege of the church, consisting in places consecrated to religious duties, being exempted from criminal arrests, whence proceeded sanctuaries; and also

in the persons of clergymen being exempted from criminal process before secular judges in particular cases. It was formerly confined exclusively to the clergy, but afterwards extended to every one who could read. The method of granting it was settled in the reign of Henry the VI. which required that the prisoner should first be arraigned, and then claim his benefit of clergy by way of declinatory plea, or after conviction by way of arrest of judgment; which latter mode is usually practised.

At the present time, in all felonies, whether newly created, or by common law, clergy is now allowable unless taken away by express words in an Act of Parliament. When therefore, in Acts of Parliament, any crime is made *felony without benefit of clergy*, it is called a capital offence, and the criminal must be sentenced to death.

CLIMATE, a term applied to the various regions of the earth in which marked and decided differences of temperature, length of days, the weather, the seasons, &c. are more or less uniform, striking, and apparent.

It is now, however, well known, that difference of climate often depends upon difference of elevation above the surface of, and contiguity to, the sea, as well as upon difference of latitude; hence, even in the torrid zone, at about 7000 feet above the level of the sea, a genial, healthy, and temperate climate is found, particularly on the table-land of Mexico.

Variations of the same climate, if sudden, are very prejudicial to health; and so also are sudden transitions from one climate of very different temperature to another: hence the cause of so many Europeans falling victims in going to the torrid zone: but it does not appear that transitions from a hot to a cold climate are by any means so destructive to life. The unusual stimulus of heat applied to European constitutions in warm climates, appears to hurry on the circulation, and produces diseases and death.

The climate of Great Britain has been extolled by some persons, and de-

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preciated by others, when, in truth, its qualities depend rather upon the manner in which we live than upon the climate itself. Our sudden changes from cold to heat and *vice versa*, are, unquestionably, injurious to those persons who live in warm carpeted rooms, and whose excitement is kept up by a high degree of artificial heat, whereas, let the same persons live in cool rooms, and take plenty of muscular exercise in the open air, neither will the diseases be the same, nor will the changes of the climate affect them in the same way. See DRESS.

CLIVERS, Cleavers, Goose-grass, or *Galium aparine*, a climbing annual plant, found in our hedges, and well known. Young geese eat the leaves, and the whole plant is eaten by horses, cows, sheep, and goats. Its juice has been occasionally given as an aperient in obstructions of the viscera, and as a diuretic in dropsy, and suppressions of urine; but is now neglected.

Cloathing. See DRESS.

CLOATHING OF HORSES, in the stable, is a very pernicious custom. In a good stable horses in health never want it at any season of the year. And it ought to be most strongly impressed upon those having the care of horses, that the cooler they are kept when in the stable, provided they are not unwell, the less liable they are to suffer from any change or vicissitude of the weather, when exposed to it. Warm cloathing, warm close stables, and other excessive stimulants, for horses in health, are bad, and should be avoided: notwithstanding, draughts and currents of cold air in stables should not to be permitted.

Clock. See TIME-PIECE.

Clot-burr. See BURDOCK.

CLOSE-STOOL, a chamber implement very necessary for a sick room. The exhalations from such vessels may be prevented by dissolving four ounces of sulphate of iron in half a gallon of boiling water, and when cold, let a quart of it be poured on the fæces after each motion.

Closet-water. See WATER-CLOSET.

CLOTH, a manufacture of wool, cotton, linen, &c. woven in a loom.

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Woollen cloths are liable to be stained by various accidents: for removing spots, grease, &c. from these, see SCOURING.

Cloud. See METEOROLOGY.

Cloud-berry. See BRAMBLE.

CLOVE, a term used in the weight of wool, consisting of seven pounds. In Essex eight pounds of cheese and butter are a clove.

CLOVE, or *Caryophyllus*, a well-known spice, the unexpanded flower of the *Eugenia Caryophyllata*, or **CLOVE-TREE**. See the next article.

CLOVE-TREE, Yambou, or *Eugenia*, in botany, a genus consisting of twenty-nine species, natives of the East or West Indies, or South America; they are generally trees, rising to between twenty and thirty-feet; bearing a plum-shaped fruit, inclosing a single nut.

The two following are particularly worth noticing:

The *Jambou*, or Malabar plum. The fruit is eaten both fresh and preserved in sugar. A conserve is made of the flowers for medicinal purposes, and most commonly used as an astringent.

The *Caryophyllata*, or Aromatic Clove-tree, a native of the Moluccas, where it was originally found; but it has been since transplanted to the Isle of France, to Cayenne, and to the island of Dominica in the West Indies, at all which places it is now cultivated. It is a handsome tall tree, rising upon a stem of very hard wood, covered with a greyish smooth bark; and about four or five feet in height before it branches. The leaves are oblong, lanceolate, and pointed at both ends; firm, with many parallel nerves, and supported on brown petioles, about half the length of the leaf. The colour of the leaves is a dull green, and when bruised their odour is strong and aromatic. Its flowers are in terminal bunches, consisting of nine, fifteen, or twenty-one flowers. The fruit is an inferior, coriaceous, bilocular berry; although the unopened flowers of this tree, and even the leaves, particularly their petioles, are extremely aromatic and odorous, yet the flowers are inodorous when they are fully blown, and the real fruit is not aromatic.

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The **CLOVES** are the unexpanded flowers, which are first obtained when the tree is six years old. At Amboyna they are collected from October to December, when they begin to redden. They require to be dried quickly; on which account they are first immersed in boiling water, then exposed to smoke, and at a heat of 120 degrees, till they begin to assume a brown hue; and afterwards the drying is finished in the sun. In the West Indies, those cloves which are dried altogether in the sun are considered the best. Cloves are imported into this country from the Dutch settlements; the best in chests, and an inferior kind in bags. Good cloves have a strong, fragrant, aromatic odour, and a hot, acrid, aromatic taste, which is very permanent. In form they resemble a small nail, scarcely exceeding half an inch in length; with a roundish head, or kind of berry, directly under which are four sharp spreading points, concave above. Their colour is deep reddish brown; the round head is, however, lighter and yellowish, water extracts their odour, but little of their taste; alcohol takes up both: they also yield their qualities readily, by boiling, to wines, and most fermented liquors having any considerable portion of alcohol. They yield, by distillation in water, one-sixth of their weight, of a heavy, nearly colourless, oil; which becomes yellow by age: the oil of cloves, however, frequently found in the shops, is coloured artificially. It is said, also, that an oil obtained from the berries of the *myrtus pimenta*, or allspice, is frequently sold for this oil. See **ALLSPICE**.

Cloves, being brought dry from a warm climate, will, it is said, imbibe in England their own weight of water: the dealers in this spice know how to profit by this circumstance.

The uses of cloves, as a spice, are well known; but our good house-wives too often dissipate their powerful essential oil by too long boiling or baking.

As a medicine, cloves are stimulant in a greater degree, perhaps, than any of the other aromatics. They are sometimes given alone in dyspepsia; they

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also make an agreeable addition to a strong infusion of chamomile flowers drunk for the same complaint. But they are chiefly used as a corrector of those purging medicines, which, without them, produce griping pains in the bowels. The oil is also used with the same intention, and it is also dropped on lint, and placed in the hollows of decayed and aching teeth to allay the pain. An *infusion of cloves* is now ordered by the London College; it is made by pouring half a pint of boiling water to one drachm of bruised cloves, and macerating for two hours in a lightly-covered vessel, and then straining it off.

The dose of powdered cloves may be from five grains to ten: of the oil from two drops to six, rubbed with sugar. The dose of the *infusion*, which may be advantageously given in dyspepsia, particularly when it arises from the abuse of ardent spirits, accompanied with a sensation of coldness at the stomach, in chronic gout, and flatulent colic, is from one fluidounce and a half, to two fluidounces, three or four times a day. This infusion, it should not be forgotten, affords precipitates with yellow bark, the strong acids, lime-water, with a solution of sulphate of iron, and some other metals; it also decomposes tartarized antimony: and therefore should not be given mixed with any of these articles.

Clove-July-flower. See **PINK**.

Clove-pink. See **PINK**.

CLOVER, or **TREFOIL**, *Trifolium*, a genus of plants containing seventy-two species, chiefly natives of Europe and Asia. Seventeen or eighteen are natives of our own country. The principal are the following:

The *Officinale*, or melilot, found wild in our brakes. See **MELILOT**.

The *Repens*, or white Dutch-clover. Indigenous to our own pastures, and an excellent fodder for cattle.

The *Pratense*, or red, or broad-clover. Chiefly cultivated as food for cattle, and indigenous to our own meadows.

The *Alpestre*, or long-leaved, purple trefoil, or mountain-clover. Found wild

CLOVER

on the European continent, but not supposed to be a native of Britain.

The *Procumbens*, or hop-clover. Found wild in our own pastures.

Of all the varieties of clover the *red* is the most profitable to the farmer, both from the greatness of its produce, and the improvement which it occasions to the soil. Land exhausted by corn, and not accustomed to clover, is always restored to fertility by the shade, smother, and putrefaction arising from a weighty crop of this plant.

Red clover may be cultivated with success on almost all the more heavy and dry descriptions of land which are in a tolerable state of fertility; and it is said, also, to succeed on the deeper kinds of gravelly, chalky, and sandy soils.

Red clover-seed is known to be good by its bright appearance, by sliding easily in the hand, smelling sweet, and by the purple-coloured seeds prevailing over those of a yellow cast. The proportion of seeds sown in an acre, must be varied with the nature of the soil: on the richer soils, which are clear from weeds, ten or twelve pounds may be sufficient; and sixteen or eighteen pounds will not be too much for those which are less fertile, and more stiff; and where the land is to be converted to pasture, for two or three years, it is best to be sown thick; where it is to be cut for hay, rather thin.

It may be sown in any of the more early spring months, with crops of spring corn, such as barley or oats; or over the young wheat crops the same season: when sown with oats, the most common time of putting it in, is about the beginning of March; with barley in April. It should rarely, if ever, be sown with beans or peas, as these will in great part smother, or wholly destroy it. Clover crops may also be raised alone: and, in very rich soils, this is the most advantageous practice. The sowing, in this case, should be executed as early in the spring as the season and the land will admit. Whenever clover is to be sown with grain crops, with the intention of being kept as pasture for some time afterwards, the grain, it

should be remembered, must always be sown much thinner than if alone. Clover is sometimes put in by the drill-machine, after barley has been sown broadcast, and immediately covered by light harrowing; and, sometimes, the barley is drilled and the clover sown broadcast.

The land for clover should be brought to the utmost fineness of pulverization, in order that it may receive the seed well; and it should be sown when it is not wet; after a light harrowing it should be rolled. It is not advisable to sow two kinds of clover, or other kinds of grass with clover, if the crop be designed for hay, or for soiling animals; as early pasturage, however, such mixtures may be sometimes advantageous.

This plant after being sown requires little or no after management. But it is sometimes attacked by slugs, or other insects, in the seed-leaf, for the cure of which, see TURNIP and FLY.

The methods of disposing of crops of this kind, are either by mowing them for hay, cutting them occasionally as green-food for live stock, or feeding them down with cattle or sheep. In the first mode, a large quantity of hay, for working horses, may be procured at little expense. In this case the crops should be mown as soon as most of the heads are in full blossom, before they begin to turn brown, or die away: clover is usually in this state about the middle of June.

It is sometimes a profitable practice to let the crop stand for seed. In this case the best method is, either to eat it well down in the early part of the spring till the end of May, by sheep or other stock, or to let it stand for a first crop of hay, and depend upon the second crop for seed. The first is the best practice. But it is always necessary to take off the first growth in one of these ways, as the clover-plant does not perfect its seed early in the summer.

The crop reserved for seed, should remain in the ground till the husks or blossoms become perfectly brown, and the seeds firm. It should then be cut and harvested in the same method as

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the first crop of hay ; but it must remain in the field till it is more perfectly dry and crisp. It may then be laid up dry to be threshed out in winter at the convenience of the farmer.

The produce of clover-seed per acre, is in general, from about three to four or five bushels, when perfectly clean, and weighing from two to three hundred weight.

The principal objections in the seed-ing of clover-crops are their uncertainty on account of the state of the season, and their exhausting the fertility of the soil. But the high price, generally, of clover-seed, is a great temptation to the practice. Perhaps, however, the most profitable method of disposing of clover-crops is by SOILING. See that article.

In the feeding down of clovers on the land, it must not be forgotten, that there is not only danger of injuring the plants, but the animals which consume them. Without proper management, cattle and other animals, on being turned upon them, suffer great inconvenience, and are sometimes destroyed, by the vast distention of the stomach which takes place in consequence of eating a large quantity of such green succulent herbage. This disease is called *blown* or *hoven*. See BLOWN. The practice, therefore, of not suffering cattle or other sorts of stock to feed upon them when wet, appears perfectly correct.

The principal disadvantage of this almost invaluable plant is, the shortness of its time of continuing upon the lands, especially of the lighter and more fine kinds ; it lasting, in general, not more than two years ; on calcareous soils it is, however, found more durable. It will, beyond question, continue longest when fed continually down without being mown at all either for hay or seed.

The *white clover*, DUTCH CLOVER, or *trifolium repens*, has been greatly depended upon in bringing lands into sward from their arable state. It is an extremely useful plant on the more rich and dry, and sandy and loamy soils, as well as in the clayey and peaty descriptions, when they have been well drained from moisture ; but on the

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more wet and poorer sorts of loamy and clayey lands, it is not by any means so proper or useful, as it is not lasting, but gives place to plants of the aquatic kind, as well as others of an indifferent description. It is supposed by some not to afford so sweet an herbage as the red clover, or many other plants : with us it has, however, always been eagerly fed upon both by sheep and neat-cattle ; and when closely fed down, there can be no doubt of its great utility. That which comes up naturally by the application of manure, is said to be much more hardy than that which is sown, as well as more lasting in the soil.

This plant is frequently found wild in waste lands, where the soil is good, and it is, indeed, a very excellent criterion by which to judge of the fertility of the soil.

Club-grass. See CLUB-RUSH.

CLUB-MOSS, or *Lycopodium*, a genus of plants of the fern kind, consisting of forty-four species, seven of which are common to our own country. The two following are the most common : the *selago*, or upright club-moss ; and the *clavatus*, or common club-moss. This last affords a great quantity of pollen, which is much esteemed in some countries, for the healing of those parts of young children which are fretted.

CLUB-RUSH, or *Scirpus*, a genus of plants comprehending sixty-seven species, chiefly natives of the Cape, or East or West Indies : nine are common to the bogs, ditches, marshes, or sea-shores of our own country. The *lucustris* is the common bull-rush. See BULL-RUSH.

CLYSTER, or *Enema*, a remedy more or less liquid, introduced into the intestines by the rectum. The most usual instrument for the administration of clysters, consists of a bladder either of a pig, a calf, or an ox, to which an ivory pipe is attached with packthread, and into the end of which, within the bladder, is fixed a cork, having a small twine attached to it in such a way, that when the apparatus is properly adjusted in the rectum, the cork may be with-

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drawn, and the clyster gradually pressed up by the assistant, till the whole is lodged within the intestines. A more convenient, and durable instrument of this sort, is made with India-rubber, instead of a bladder. Syringes have been also used for the same purpose; but Mr. SAVIGNY's *machine for lavemens*, surpasses every former contrivance.

Clysters may be given with great advantage in a variety of complaints. They not only serve to evacuate the contents of the belly in cases of obstinate costiveness, and complaints of the bowels, arising from obstructions, improper food, &c.; but also to convey into the system preparations of great activity. Thus opium, Peruvian-bark, &c. when they cannot be taken by the mouth, may be given in much larger doses, and with less danger. The most nutritious and stimulating liquor may, in this manner, be given to persons unable to swallow, so that their lives may be supported for months, and even years, by clysters alone.

Clysters should be administered at about the temperature of the human body: that is, from the 80th to the 96th degree of Fahrenheit's thermometer: there are, however, some exceptions to this practice, but such cases must be determined by the medical practitioner. The quantity commonly used for adults, is from half a pint to a pint; for children, according to their age: from two or three spoonfuls to half a pint.

The following compound *decoction of mallows* is ordered by the London College as a suitable vehicle for other active ingredients of a clyster: Take of common mallow-leaves, dried, an ounce; of chainomile flowers half an ounce; water a pint. Boil for a quarter of an hour and strain.

An *Anodyne clyster* may be made of from half a pint to a pint of the above decoction, or the same quantity of barley-water, and one fluidrachm of tincture of opium.

A *laxative clyster* may be made with either half a pint or more of the above decoction, or barley-water, or mutton

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broth, in which may be dissolved one ounce of sulphate of soda, or sulphate of magnesia. Care must always be taken, that in addition to the active ingredients which may be sometimes necessary in a clyster, that the liquid in which they are given be of a mucilaginous kind as above mentioned, or gruel. There may be some exceptions to this rule, but they cannot be discriminated by the domestic prescriber.

CLYSTERS FOR HORSES, are administered by means of a smooth pewter tube, not less than a foot in length, attached to a bladder, which ought to contain five or six quarts. They are of three kinds, opening, anodyne, and nourishing: a gallon of warm water, with from half a pound to a pound of common salt dissolved in it, to which add four or five ounces of olive or linseed-oil, will answer for the first purpose. For the second, take two drachms of opium; dissolve it in about half a pint of warm water, and add from a quart to three pints of fine oatmeal, or wheat-flour gruel. For the third purpose, rich broths, wheat-flour gruel, and other nourishing fluids are recommended. In the first kind of clysters, gruel is sometimes preferred to water; but we think water is just as well. Tincture of opium is also sometimes substituted for the opium itself; when the tincture is used, it should not exceed in quantity two ounces.

As soon as the clyster has been injected, the tail should be kept close to the fundament for a few minutes, to prevent its being too hastily returned.

COACH, a vehicle for commodious travelling, suspended on springs, and moved on four wheels.

Coaches were first used in England about the middle of the sixteenth century. They have since undergone a variety of alterations and improvements in their structure. See CARRIAGE.

COACHES, HACKNEY, are those coaches exposed to hire in London, and some other large towns of the kingdom, at rates fixed by authority. In London there are hackney chariots as well as coaches; the number of chariots must

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not exceed two hundred; and the coaches and chariots together, must not exceed one thousand one hundred. They are all numbered, having their numbers painted on tin plates, fixed on the coach doors. Their fares are also settled by Act of Parliament. The penalties under the different acts for regulating hackney coaches, are recoverable at the hackney coach office, Somerset Place, Strand. And where, also, other matters relative to misbehaviour and fares are settled. But although the law is sufficiently explicit relative to hackney coachmen and their fares, few persons like the trouble, inconvenience, and loss of time of applying to the office for redress. A more simple way to deal with hackney coachmen, is to make a previous agreement as to the amount of the fare to be paid, taking care to state distinctly to what place you wish to be driven; and also taking care that the number admitted into the coach be no more than four adults in the inside, and a servant outside; and into chariots, not more than two adults; with such precautions, little difficulty or trouble will ever occur with these otherwise too-often troublesome, and abusive persons.

COACHES, STAGE, are those appointed for the conveyance of travellers and goods from one place to another.

The masters of stage coaches are in the habit of affixing notices at their coach offices, intimating that they will not be accountable for any parcel of goods beyond the value of five pounds, unless entered as of more value, and paid for accordingly. It has, however, by several trials been decided, that such general notice is not sufficient to exonerate a coach-master from responsibility for the loss of goods, of more than five pounds value; but that specific notice or agreement, or actual knowledge of such general notice, must be proved to have been given to, or known by the person who delivers parcels or goods to the coach-master, his agents, or at his office.

Stage coaches are subject to various regulations, as to the carrying of pas-

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sengers, and also to licenses and duties.

COAGULABLE LYMPH, albumen. See **ALBUMEN** and **BLOOD**.

Coak. See **COKE**.

COAL, in mineralogy, a most important genus of inflammable mineral substances, of which there are three chemical varieties, as follow:

The first, or *brown coal*, retains some remains of the vegetables whence it has originated. It is generally of a tough consistency, and yields a portion of unaltered vegetable extract and resin.

The second variety, or *black coal*, is the ordinary fuel of this country. It exhibits no traces of vegetable origin, and consists principally of bitumen and charcoal in variable proportions. When exposed to heat, it swells, softens, and burns with a bright flame, leaving a small quantity of ashes. Many sorts of this coal, however, abound in earthy matter: these produce copious cinders, and burn with a less intense heat. The products of the destructive distillation of this kind, are mentioned under **CARBURETTED HYDROGEN**, which see. The residue is a hard sonorous charcoal, termed *Coke*. See **COKE**.

The third variety, or *glance coal*, consists almost entirely of charcoal, and earthy matter. It burns without flame, and when distilled produces scarcely any gaseous matter.

What is called a *coal field*, or *district*, or sometimes a *coal basin*, may be regarded as a concavity in the earth, varying greatly in extent, from a few miles to many, containing numerous strata, or seams of coal of very various thickness, alternating with sand stones, and clays, and soft slate, or *shale*. They are seldom any where quite horizontal, never vertical, but almost always more or less inclined. Beneath each stratum of coal there is often one of soft clay, or *clunch*; and although the alternating strata of coal be very numerous, it is seldom that more than three or four will afford profit to the miner. The depth of the mines varies. The deepest mines in Great Britain, are in the counties of Durham and Northumber-

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land; the thickest beds are in Staffordshire: the most productive vary from six to nine feet.

The coals of Lancashire, Scotland, and the West of England, burn quickly and brilliantly into a light ash; while those of Northumberland and Durham, become soft and puffy, spout out bright jets of flame, require poking, to continue in combustion, and produce bulky cinders, which, if urged in a violent fire, or mixed with fresh coal, run into slags or clinkers. But there are, notwithstanding, many exceptions in the several districts, to these general characters of coal.

From the abundance of vegetable bodies with which coal is often associated, the gradual transitions of wood into coal, discoverable in many parts of the world, and an examination of the structure of lumps of coal upon fracture, there is every reason to conclude, that coal is the produce of submerged vegetable matter, particularly the leaves and trunks of trees. How, or when such submersion took place, conjecture has busied itself in vain: antediluvian timber, and peat-bog, present sources of its most probable origin.

The coal miners are often seriously interrupted in their proceedings, by large fissures, or breaks, in the strata. It is in the neighbourhood of these, that immense quantities of carburetted hydrogen gas are frequently evolved, constituting the fire-damp of the mines. When this gas has collected any where, so as to constitute one-thirteenth of the volume of the atmosphere, it becomes explosive whenever a flame is presented to it, and dreadful destruction is frequently the result. See LAMP.

Coal is used for the supplying of heat and light for innumerable purposes. It is also used in large quantities for the smelting of ores when converted into coke. And it is latterly used in immense quantities for the production of the carburetted hydrogen gas, with which the streets and houses of the metropolis, and some other cities, are now so brilliantly illuminated. The

ashes of coal is also exceedingly useful as manure. See ASHES.

There are various kinds of coal brought to London: principally from Newcastle and Sunderland. They vary in price and quality, from one to fifteen shillings in the chaldron.

Coals are sold by the chaldron or by the bushel. See CHALDRON and BUSH-EL.

There is also a custom in London of calling the measuring of coals from the vessels in the Thames in the large way, *Pool measure*. This measure is one fourth of a chaldron extra, on every five chaldrons: a room of coals of five chaldrons and one fourth, will contain about 68 sacks, of three bushels each; but the quantity may be divided into from 70 to 90 sacks if they are filled up, and not measured by the bushel, under the inspection of a sworn meter. In this extra measure, the principal profits of the coal merchant consist.

The *duty* on coals brought into the port of London from any part of the coast of Great Britain, is nine shillings and fourpence per chaldron; into any other port in England from the same places, six shillings per chaldron. Coals brought by canal to Paddington, pay seven shillings and sixpence per ton, and a further sum of one shilling and threepence per ton to the city of London. The inhabitants of London and its vicinity, pay besides, on every chaldron of coals, 8d. for metage; 6d. for orphans' dues; 1d. for market dues; $\frac{1}{4}$ th of a penny city dues; and on all coals brought out of the river Tyne, 6d.

The sale and measuring of coals in the port of London, are regulated by various acts of Parliament.

The quantity of coals now brought into London annually, is upwards of one million of chaldrons.

COAL BALLS, a mixture of small coal and soft clay, free from stones, in the proportion of one third of the former, to two of the latter. This composition is divided into balls, about three or four inches in diameter, and afterwards thoroughly dried. When

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the fire burns clear, four or five of these balls are to be placed in the front of the grate, where they will soon become red, and yield a clear and strong heat, till they are totally consumed. Where coals are dear, this is undoubtedly an economical method of employing it.

COAL-CANNEL, or CANAL COAL, is of a dull black colour, and breaks with great facility in every direction. It does not soil the fingers like common coal. It is also of an uniform and hard texture, may be turned on a lathe, takes a good polish, and is used for making various toys, which strongly resemble those made of the finest jet.

Coal gas. See **CARBURETTED HYDROGEN**, and **GAS**.

COAL, KILKENNY, is the lightest kind of coal, emits less smoke and flame, produces a more intense degree of heat, and is at the same time more slowly consumed than cannel coal. It is chiefly found in the county of Kilkenny, in Ireland.

COAL-MINE, a mine in which coals are dug. Wilfully and maliciously setting on fire any mine, pit, or depth of coal, or cannel coal, is felony, without benefit of clergy.

COBALT, or Cobaltum, a semi-metal, of a reddish grey colour, brittle, and difficultly fusible. Its specific gravity is 7.7. In a red heat, it gradually becomes a blue powder; in a violent heat, burning with a red flame. Fused with borax it becomes a fine blue glass. Dissolved in muriatic acid, it forms a sympathetic ink. Eight species of the ore have been found, the following are the chief: The *nigrum*, or black cobalt; found in the mines of Great Britain, Austria, Saxony, and Hungary;—the *ochraceum*, or brown cobalt ore: two other kinds, one a dull yellow, the other green; found in the mines of Great Britain, and on the continent; it readily forms a glass of various shades of blue;—the *cobaltigo*, or red cobalt, arseniate of cobalt; found near the lakes of Kilarney, in Ireland, and in most places where the other ores of cobalt abound. It consists of cobalt, and the arsenious acid;—the *sulphura-*

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tam, or *sulphureous* cobalt, found in Sweden and Hungary, of a tin white colour and lustre;—the *pyriticosum*, or white cobalt ore: found in Sweden, Hungary, Saxony, and Bohemia;—the *crystallinum*, or grey cobalt ore; found in Cornwall, and other parts of Europe.

Cobalt, in the ore, is always mixed with arsenic, often with iron, nickel, and sulphur; and sometimes with bismuth and silver. The finest specimens are the produce of Saxony.

The alloys of cobalt are unimportant. The chief use of cobalt, is as a colouring material for porcelain, earthenware, and glass, to which it communicates the beautiful blue colour so much admired.

It is principally imported from Germany, in the state of *zaffre*, and *smalt*, or *azure*.

Zaffre is prepared by calcining the ores of cobalt, by which the sulphur and arsenic are volatilized, and an impure oxide of cobalt remains, which is mixed with about twice its weight of finely-powdered flints.

Smalt and azure blue are made by fusing *zaffre* with glass; or by calcining a mixture of equal parts of roasted cobalt ore, common potash, and ground flints. In this way a blue glass is formed, which, while hot, is dropped into water, and afterwards reduced to a very fine powder.

COCULUS INDICUS, or INDIAN BERRY, is the produce of the *menispermum cocculus*, a native of the south of Europe. This berry is, we are sorry to say, too well known to the brewers, who use it for the purpose of giving an intoxicating quality to their liquors, although they are liable to severe penalties for so doing. It is a powerful poison, and should by no means whatever be at any time employed as human food or drink; nor is it ever prescribed as a medicine. For the mode of treating persons who have taken this poison, see *NUX VOMICA*.

COCCUS, or Cochineal insect, a genus of insects consisting of forty-six species, inhabiting various trees and plants in the different quarters of the

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globe : they are extremely prolific, and extremely troublesome in hot-houses and green-houses. The snout of this animal is in the breast ; the antennas filiform ; abdomen bristly behind ; male with two erect wings, but without poison ; female without wings. The male is very active ; its body long, and ovate abdomen. The body of the female is nearly globular ; it is slow, inactive, and fixed to the different parts of the plant. Among ourselves, the trees chiefly infested with them are the oak, elm, and maple. The following are the principal species :

The *hesperidum*, or green-house bug, brown colour with a glossy polish ; found on various evergreens in the green-houses of most countries.

The *adonidum*, with a body purplish black, found also in green-houses ; chiefly on the evergreen asiatic trees. Both these species have been imported into our own country on exotic plants brought from Asia and Africa.

The *cacti*, or cochineal. See COCHINEAL.

The *ilicis*, or kermes insect. See KERMES.

The *polonicus*, having an oblong-ovate body, purple or chesnut ; found chiefly on the roots of the *scelanthus perennis*, only in cold climates ; and may hence be regarded as the cochineal of the north, it being often used by dyers, although it affords an inferior hue.

The *ficus*, or Lac insect. See LAC.

The animals of this kind, which infect apple and peach-trees, are best got rid of by rubbing the branches in the spring with a hard painter's brush.

COCHINEAL, or *Coccinella*, the female of the insect *coccus cacti*, found on the *cactus coccinellifer* and *cactus opuntia*, or prickly pear. See CACTUS.

The *coccus cacti* has a depressed, downy, and transversely wrinkled body ; the abdomen is purplish ; the legs short, black ; the antennas subulate, a third part shorter than the body. The female is the true cochineal ; in her full-sized, pregnant, and torpid state, she bears so small a proportion to her former, or creeping state, that her antennas, legs,

and proboscis are scarcely discernible ; her whole appearance is that of a berry, and was formerly so regarded. As soon as she is fully impregnated she spins a fine thread, and with it forms a web, with which she envelopes herself ; when she becomes torpid, and immediately after laying her eggs, dies, and is a mere useless husk. The male is a small, and rather slender, two-winged fly, about the size of a flea ; he is active and lively, and dispersed in small numbers among the females ; probably in the proportion of one to a hundred and fifty, or two hundred.

The cochineal insect is found in its wild state in Mexico, Georgia, South Carolina, and some of the West India Islands, feeding on several species of the cactus ; but in Mexico, and some of the adjoining Spanish settlements, the insect is as it were domesticated, reared with great care, and fed on the *cactus coccinellifer*, which is cultivated for the purpose ; and on it the insect attains to a greater size than in the wild state. The wild cochineal is collected six times a year, just before the females begin to lay their eggs, a few being left to furnish a future supply. But the domesticated insect is collected thrice only in the same space of time. At the third gathering, branches of the plant, to which a certain number of females is left adhering, are broken off, and preserved with great care under cover during the rainy season ; after which they are distributed over the plants of the cactus, and in the space of two months the first crop is fit to be gathered. The insects are detached from the plants by a blunt knife, put into bags, and dipped in boiling water to kill them, and afterwards dried in the sun. They lose two-thirds of their weight by this process ; notwithstanding which, 600,000 lbs. are brought annually to Europe. Each pound is said to contain 70,000 insects. The monopoly of this article is still in the hands of the Spaniards, but attempts are making to propagate the insect in the East Indies : we understand that the prickly-pear is indigenous to that country.

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Cochineal was introduced into Europe about 1523. The domesticated kind is not only much larger, but yields a richer colour; the wild one is only half the size of the other; but as we receive them they are often mixed together. They have the appearance of small, dry, wrinkled berries, or seeds of a deep brown, purple, or mulberry colour, with a white matter between the wrinkles. In this state, they suffer no change from length of keeping. The best are large, plump, dry, and of a silver-white colour on the surface.

Cochineal has a faint heavy odour, and a bitter austere taste; it is easily rubbed into a purplish red powder, the colouring matter of which is taken up by water, alcohol, and solutions of the pure alkalis. It is of no use in medicine, except as a colouring drug; but, in dyeing and the arts, it is of very great importance. See DYEING and CARMINE.

COCK, or *Gallus*, the male of the common hen, a species of the *Phasianus*, well known. See HEN and PHEASANT.

COCK-FIGHTING. A brutal sport too well known to need description. We merely mention it here to observe, that the persons who can be amused by gazing on the ferocious conflicts of cocks, bulls, and dogs, and of other savage animal strife, are not, we fear, likely to be influenced by any thing which we can say against such inhuman and unfeeling practices; yet, as thoughtlessness, and the example of superiors, are the principal causes of such sports, we are not without hope that better kinds of amusement will be countenanced, and that our own species will cease to contend with the brute for inferiority in degradation.

Cock-chaffer. See BEETLE.

Cockle. See CORN-COCKLE.

COCKLE, or *Cardium*, in zoology, a genus of shell-fish, consisting of fifty-two species, inhabiting the shores of all the quarters of the globe. The common cockle, or *cardium edule*, may serve as a general specimen for the whole. In this the shells, two in number, are antiquated with twenty-eight

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depressed ribs, with obsolete recurved scales; it is found on all the sandy coasts in great abundance, lodged a little beneath the sand; its burrow pointed out by a round depressed spot; shells generally white, with sometimes a blueish or yellowish cast. It affords a wholesome and nutritious food. Most of the species are edible; but chiefly this and the *rusticum*, which is found principally on the European, and especially on the Mediterranean coasts.

COCKROACH, or *Blatta*, a genus of insects of the beetle kind, consisting of forty-seven species, the distinctive character of which is, that they wander about by night, and in the dark, in search of food, and secrete themselves by day: they are fond of warmth, and haunt houses, devouring whatever provisions they can get at. They may be destroyed by the fumes of burning charcoal. The principal species are the following:—the *gigantea*, of a livid colour, inhabits America and Asia. This species is very annoying in the West Indies, and is known by the name of *drummer*, from the noise which it makes: the *orientalis*, of a yellowish brown; this insect has been, unfortunately for us, naturalized in our own country, and bears the improper name of black-beetle; in London it is very common, so that it is difficult to secure our provisions or warehouses from its depredations: the *americana*, of an iron colour: the *heteroclita*, colour black, with white spots; a native of India; the *chlorotica*, yellowish grey, a native of the Cape. The eggs in all the species are deposited in a kind of connate group, appearing, at first view, like a single egg.

COCK'S-COMB, or *Celasia*, a genus of plants comprising eighteen species, natives of the East and West Indies. Of these the *cristata*, or common cock's-comb, is chiefly worth noticing. It is an Asiatic plant with oblong ovate leaves. The colours of the comb, or amaranth, are red, purple, yellow, or white, sometimes variegated with two or three hues. It is a tender annual flower, propagated by seeds, which should be sown about the begin-

ning of March on a moderate hot-bed. When the plants appear, care should be taken to give them air, and to keep them from moisture. In about three weeks they should be transplanted, four inches apart, into another moderately hot-bed covered with rich light earth, about four inches deep. When the plants have taken root and begin to grow, give them a little air every day. In about a month they should be again transplanted into another hot-bed of the same kind, but with a depth of six inches of earth, and at a distance of seven or eight inches apart. In the beginning of May another hot-bed must be provided, which should be covered with a deep frame to give them room to grow. Upon this hot-bed set as many pots as can stand within the frame; fill the pots with rich earth, and transplant the plants one in each pot. The cavities between each pot must be filled with common earth. In September, when the plants have perfected their seeds, choose the most beautiful of each kind for seed, and remove them under shelter, in order that the seeds may be perfectly ripened. The best seeds are those in the middle of the plume.

COCK'S-FOOT, or Cock's-foot grass, or *Dactylis*, a genus of plants containing fourteen species, scattered over the globe, of which the *stricta* and *glomerata* are common to our own country: the former to our sea marshes, the latter to our meadows. It is also cultivated to a great extent, and with astonishing success, at Holkham, in Norfolk. The quantity of sheep kept upon it, summer and winter, is surprising; the land becoming renovated by lying two or three years under grass, and enriched by the manure of the sheep. This plant, in the opinion of many, ought to supersede the use of rye-grass; it is early, hardy, and productive; but it is a coarser plant than rye-grass, and requires even greater attention in regard to being cut soon or fed close. Its culture is, perhaps, most valuable on moist soils, where there is a bottom of a clayey marl; and in cases where the grasses of a finer kind are liable to be overpow-

ered and destroyed by those plants common to the soil. It is best and most profitable when kept closely fed down by sheep.

Cock's-head. See **SAINFOIN**.

COCOA, a term very generally, although improperly, applied to a well-known preparation sold in the shops. Persons making or selling any *spurious* cocoa are liable to a severe penalty. See **CACAO**.

COCOA, or *Cocos*, a genus of trees consisting of five species, natives of the tropics, East Indies, and South America. They are as follow:

The *Nucifera*, or **COCOA-NUT-TREE**, which rises to the height of sixty feet, and is slenderer in the middle than towards the top or bottom. The leaves, or branches, are often fourteen or fifteen feet long, and twenty-eight in number, winged, of a yellow colour, straight and tapering. The wings are green, often three feet long next the trunk, but diminishing in length towards the extremity of the branches. The nuts hang at the summit of the trunk in clusters of a dozen each. The incrustated white meat of the nut is formed of the interior milky fluid, often upwards of a pint, which is continually concreting as it ascends from the root. The leaves are wrought into brooms, mats, sacks, hammocks, and other utensils. In its original climate this tree was probably an Asiatic, but it is now found in almost all the warm parts of America. It may be propagated in Great Britain from the ripe nut, which should be kept in large pots of sand during the voyage; and if it should shoot in the course of the passage, it will be so much time gained. The nuts brought to England for sale will seldom answer for the purpose of propagation, as they are almost always plucked before they are ripe, that they may more safely endure the voyage.

The *Butyracea*, or **Palm-oil tree**. See **PALM-OIL**.

The *Guineensis*, or **Prickly-pole**, a native of Carthage.

The *Aculeata*, or **Macow tree**, a native of the Caribbees.

COD

The *Nypa*, an East Indian tree.

COD, or *Gadus*, a genus of fishes consisting of twenty-three species, chiefly inhabitants of the European seas, and especially towards the North; a few of the seas of America, and one or two of the Pacific Ocean. The following are the most remarkable:

The *Æglesinus*, or Haddock, whitish; tail forked; upper jaw longest; eyes large, pupil black, iris silvery; scales minute, rounded; very minute teeth in the jaws. Inhabits the northern seas, and migrates in vast shoals, which appear on the Yorkshire coast about Christmas; feeds in summer on young herrings, and other small fish; in winter chiefly on small shell-fish. Flesh white, and tolerably good.

The *Callarius*, or Zorsk, various in colour; head less than the last; cinereous; spotted in the summer with brown, in winter with black; inhabits the Baltic and northern seas; flesh white, firm, and finely flavoured; seldom more than two pounds weight.

The *Morhua*, or common Cod; mouth large, jaws equal; cinereous; spotted with yellowish, beneath white; the younger fishes sometimes reddish, spotted with orange; scales larger than any of its tribe; weighs from ten to forty pounds or more; flesh white, and good when in season.

The stated emigration of the common cod is a very remarkable circumstance in its natural history. The cod, the haddock, and the whiting issue forth in immense shoals from the Arctic seas, very early in the spring, and after having dispersed over the temperate latitudes, again regularly return to their northern retreats about the same time of the year. The cod, however, never ventures into the warmer tracts of the ocean, and it seems in greatest perfection between the fiftieth and sixtieth degree of north latitude. The grand resort, however, for centuries past, has been on the banks of Newfoundland, and Cape Breton. Here they are taken in such quantities that they supply all Europe with a considerable stock of provisions. They make also annually their appearance on

the coasts of Iceland, Norway, and Britain, gradually diminishing in numbers as they proceed to the south, and ceasing altogether on this side the straits of Gibraltar.

The food of the cod is small fishes, testaceous animals, such as crabs and whelks; but their digestive powers are so strong, that they dissolve almost every substance which they swallow. Their time of spawning is from January to April: after having been exonerated of a load containing three millions of young, the parent recovers its plumpness sooner than almost any other fish, and is caught in good condition during almost the whole summer.

The liver of this fish produces the oil which is used by the curriers for softening their leather, usually called **COD-OIL**. The flesh is sold, salted, in almost every European market. The sounds are reckoned a great delicacy, and frequently brought from Newfoundland salted by themselves; the fishermen of Iceland make isinglass with them. See **ISINGLASS**.

Our opinion of fish as food may be seen under the head **ALIMENT**; but salted cod is of a still lower kind of aliment; the dyspeptic, and valetudinarian, should therefore avoid it.

The *Fuscus*, or Bib, body above pale olive, belly white, side tinged with gold; flesh excellent; inhabits European seas; grows to a foot long.

The *Barbalus*, or Whiting pout; body white, more dusky on the back, and tinged with yellow. Inhabits the northern European seas; from fifteen to eighteen inches long.

The *Minutus*, or Poor; body silvery, spotted with black; inhabits European and Mediterranean seas: seven inches long.

The *Merlangus*, or Whiting; back dusky, rest of the body white; body long, rounded, covered with small, round, tender silvery scales; inhabits the European seas; appears on our own coasts in vast shoals in the spring; generally about a foot long; esteemed by many epicures the most delicate of all its tribe.

COFFEE

The *Carbonarius*, or Coal-fish ; inhabits the European and Pacific seas ; grows to two feet and a half long ; appears about the beginning of July in large shoals about the Yorkshire coast ; varies much in colour, but grows blacker with age.

The *Pollachius*, or Pollack ; inhabits the rocky coasts of Europe ; usually about eighteen inches long : migrates in great shoals.

The *Merluccius*, or Hake ; flesh white, but not much esteemed ; inhabits the northern and Mediterranean seas ; from one and a half to two feet long ; very voracious, and migrates in vast shoals.

The *Molva*, or Ling ; inhabits the northern seas ; grows to seven feet long ; approaches the shores about June to deposit its spawn : is in perfection from February to May.

Coddled Mouse-ear. See Common WALL-CRESS.

Codlings and Cream. See WILLOW-HERB.

COFFEE, the seeds of the *Coffea Arabica*, or COFFEE-TREE ; a decoction or infusion of these seeds in water, after they have been previously roasted and ground to a powder, is also called coffee.

The *Coffea*, or COFFEE-TREE, consists of ten species, chiefly natives of the East Indies, South America, and the Polynesian isles. The only species which we can notice is the *Coffea Arabica*, of which there are two varieties, though both are sold in our shops as Turkey coffee, and possess similar qualities.

The tree seldom rises more than sixteen or eighteen feet high, with an erect main stem, covered with a lightish brown bark ; the leaves are oblong, pointed ; flowers in axillary clusters, with five-cleft corols. The fruit resembles a cherry ; and grows in clusters ranged along the branches under the leaves, which are of a laurel hue, but rather longer than a laurel leaf. It is an evergreen, and makes a beautiful appearance, at every season, in the stove, but particularly when it is in flower. It is now propagated in great plenty in various parts of America and the West

Indies, but the produce of these countries is greatly inferior to that of Arabia.

The plant is propagated by seeds, which should be sown soon after they are gathered from the tree, or they will not grow ; so that in order to cultivate it in distant parts of the world, it is absolutely necessary to have it carried thither in a growing state.

The berries are commonly ripe with us in April, at which time they should be sown in pots of fresh light earth, covering them with the same about half an inch thick ; then plunge the pots into a moderate hot-bed of tanner's bark, refreshing them often with water, and also raise the glasses in the heat of the day, to admit fresh air ; and in very hot weather it will be proper to shade the glasses with mats ; the pulp of the berries, which are to be sown, should not be taken off. When the plants are removed, great care is necessary not to injure the roots, and also to preserve the earth around them ; nor should they be kept any time out of the ground. The best soil for this tree is the following : one load of fresh light loamy earth ; one load of rotten cow-dung ; and half a load of sea-sand ; these should be well mixed together, and laid in a heap for six months, during which period it should be turned several times.

Various reasons have been assigned for the difference between the qualities of Mocha, or Turkey Coffee, and the several varieties raised in the West Indies and America : we believe, however, that the principal difference is occasioned by the difference of soil and climate : the West India varieties of coffee appear to possess more gross, oleous properties, than those of Arabia.

Relative to the medicinal qualities of coffee, we confess ourselves scarcely advocates for its use upon any occasion where diet is of importance to be studied : and least of all can we recommend it to the dyspeptic. As we have said upon other occasions, and of other food, it may form an agreeable variety for those persons whose digestive faculties are good, and whose health permits them a large range in the choice of

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aliment ; but surely a *burnt* vegetable, containing a portion, however small, of oil, which has become more or less acid, or rancid, by heat, can suit few, if any stomachs, where debility is present ; and we fear the addition of sugar and cream to the decoction, under such circumstances, is only calculated to increase the mischief. If, however, coffee for dyspeptic persons, be at any time adviseable, the Mocha is, undoubtedly, to be preferred, and that not *too highly* roasted.

Coffee has been often imitated in this country : at the present time wheat, roasted to almost blackness, is sold in large quantities as a substitute for it ; and those whose taste is not delicate, and who like such *burnt* infusions, may be pleased with it ; but as a medicine, the same objection applies to it as to coffee.

Persons making or selling any spurious coffee, are liable to a severe penalty.

The duty on British Plantation coffee is 1s. per lb. ; on East India coffee 1s. 6d. per lb. ; and on foreign coffee 2s. 6d. per pound.

COFFIN, the chest in which a dead body is usually put for interment. The sepulchral honours paid to departed friends in ancient times, are extremely curious. Their being put into a coffin was, with them, considered as a mark of the highest distinction ; though with us, the poorest persons have their coffins.

As a practice prevails in this country, of which no feeling mind can approve, that of robbing graves of bodies for the purposes of anatomical dissection, many patents have been obtained for coffins of such a kind, that the bodies cannot be taken out of them. The last patent is that of Mr. BRIDGEMAN's for IRON COFFINS, which is beyond question the most effectual for the prevention of the stealing of dead bodies, of any hitherto invented : but from some unfortunate combination of circumstances, considerable reluctance has been manifested by some of the churchwardens in London in permitting iron coffins to be buried in the church-

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yard : the *right* of burying in iron coffins in London, therefore, yet remains to be decided.

It is to be lamented that such contrivances as iron coffins should be deemed necessary to prevent the feelings of the living from being wounded : for it must be admitted that the study of anatomy is of the first importance to mankind ; and without dead bodies, no such study can be pursued. Were all who suffer under the sentence of the law to be devoted to this purpose, or would heroic individuals bequeath their bodies for the advantages of such a science, and of course, for the benefit of our species, many good effects might arise, and the obnoxious practice of midnight exhumation be expunged from the catalogue of our social misdemeanours.

Notwithstanding coffins are generally used in the burial of the dead, it is quite manifest that the retention of so large a mass of putrid effluvia, in such a confined space as a coffin, is by no means a commendable practice. The sooner the parts of which a dead animal body is composed, are reduced to their original elements, the less danger can arise from it ; and in burial places in towns, this consideration is of no trifling moment. See BURIAL and BURYING-GROUNDS.

COHESION, in natural philosophy, that species of connexion which, uniting particle to particle, retains together the component parts of the same mass. Modern chemists consider the *attraction of cohesion*, as the instrument of aggregation, or the union of similar compounds.

COIN, a piece of metal generally circular, and having certain figures or devices upon it : coin is more usually applied to those pieces of metal issued by the governments of most civilized nations, to serve as media of exchange, and commonly denominated money.

The precise epoch of the invention of money, is too ancient for our annals ; as soon as the acquisition of individual property became desirable, it is pretty clear, that money, or something equi-

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valent to it, must have been invented for mutual convenience.

In England, the Royal Mint attained its constitution of superior offices, in the 18th year of the reign of Edward II. ; and with very few alterations, continued as then established, till the year 1815, when a new constitution of the mint was established, a new mint with improved machinery having been previously erected.

The only gold coins, till lately, current in this country, were guineas, half-guineas, and seven-shilling pieces ; but latterly sovereigns, and half-sovereign gold-coins have been issued : those of silver are crowns, half-crowns, shillings, and sixpences ; to these must be added two-penny pieces, pennies, halfpence, and farthings, made of copper. For the weight and value of the silver and gold coins, see the respective articles in the order of the alphabet, and also **MONEY**.

Severe punishments are inflicted on those who are guilty of counterfeiting, debasing, or even clipping the current coin of the realm.

COKE, or **COAK**, is common coal divested of its humidity, oil, and gaseous matters. It is left in large quantities, after the distillation of common coal, for the purpose of obtaining carburetted hydrogen. Coke is used in our manufactories for exciting an intense heat, for the smelting of iron ores, and for processes in which smoke would be injurious. Coke has been commonly prepared from coal in the mining districts in the open air, by a very simple process, or in ovens expressly constructed for the purpose, to the great waste of the gas, and other volatile matters : but since the adoption of gas illumination, these products may surely, even where coal is cheap, be turned to some account. In London, coke from the gas-works can now be obtained at about half the price of coal, with an admixture of which, for culinary purposes as fuel, it answers extremely well.

Colchicum. See **MEADOW-SAFFRON**.

COLD, in natural philosophy, the privation or absence of heat. The hu-

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man body contains within itself, as long as it is living, a principle of warmth, or heat ; if any other body, of a higher temperature than the human body, come in contact with it, the warm or hot body, whatever it might be, yields a part of its caloric, or heat, to the human body ; and such body is said to be warm or hot in proportion to the degree of heat which it possesses or imparts. But if, on the contrary, the human body touch another body possessing a degree of heat below the temperature of the human body, a part of the heat of the human body passes into such body, and it is said to be cold. Thus the temperature of our bodies is, with respect to us, the limits of heat and cold ; but it is evident that both these terms are only relative : for we shall feel the same substance cold, which to us appeared hot, when the temperature of our own bodies, from whatever cause, becomes altered. It is well known to every one, that caves, and many cellars, are found to be cold in the summer, and hot during the winter ; when, in truth, the different sensations are produced by the different temperature of our own bodies, and the external air : for the temperature of such places varies very little at any season of the year. This appears to be the general outline of both cold and heat : there have, however, been many ingenious attempts to explain still further the theory of both, but with very little appearance of truth, or of practical utility.

Certain it is, that from some self-corrective power in nature, man is, in an infinity of instances, and a variety of climates, enabled to support different degrees of heat and cold, with astonishing facility. To this end, however, we are prompted by our feelings to adopt a different dress, in order to retain or part with the animal heat. Thus in cold climates, a wool covering, from its slow and badly conducting power, prevents the escape of that heat, the loss of which would inevitably produce disease, and even death itself ; and in hot climates, the slightest covering,

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with a protection from the immediate contact of the sun's rays, are essential to keep the body sufficiently cool, so that the functions may be duly performed.

From the improper and *sudden* addition or abstraction of the powerful stimulus of heat, various diseases are produced. Thus it often happens that by exposure to extreme cold, the fingers, the ears, toes, &c. are frozen, or that the natural heat of those parts is reduced to the lowest point consistent with life. If in such cases heat of any kind be too suddenly applied to restore the sensation, a mortification will ensue, and the frost-bitten parts spontaneously separate. The process of obtaining a common chilblain is an exemplification of this doctrine. Hence, when limbs, or any other parts of the body become torpid and benumbed by the abstraction of heat, they ought to be restored to their natural temperature either by rubbing them with snow, or immersing them in cold water, and afterwards applying warmth in the most careful and gradual manner, by which they will soon be restored to their usual tone and activity. Indeed, it ought to be an invariable rule with every person whose extremities are benumbed with cold, never to enter a room where there is a fire, or the temperature of which is many degrees above the freezing point, till the extreme cold of the body is removed, by the gradual addition of temperate heat. Not only is the administration of heat to cold living bodies necessary, to be thus adjusted, but one of the acts of restoring suspended animation from drowning and other causes, consists in adjusting with accuracy the natural and artificial stimuli to the exact tone of the irritable animal fibre.

The properties of cold appear to be directly opposite to heat; the latter increases the bulk of bodies, the former contracts them; and while fire tends to dissipate their substance, cold condenses them and strengthens their mutual cohesion. There are, however,

some exceptions to this, particularly relative to water. See **WATER**.

The cold produced by evaporation is, under certain circumstances, very great. Spirit of wine, and ether, which readily evaporate, produce considerable cold during that process. Upon this principle, wine-coolers, and similar porous vessels, refrigerate the fluids which they contain: and in hot climates advantage is taken of the process of evaporation, to cool not only wines and other liquors, but by causing water to be thrown upon the window blinds, which are made of split bamboo, the air of a sitting-room is soon rendered cool and agreeable. Upon this principle, also, it is that rain in summer is more cooling in proportion as the evaporation is greater in a given time.

Another cause of cold is a considerable elevation above the level of the sea. On a mountain of only one thousand feet above the level of the sea, even in England, we rarely experience in the hottest day in summer, any sensation approaching to that which we call hot; and at an altitude of three miles and a half, the air is generally 68 degrees colder than at the level of the sea. Mountains are hence regarded as the grand stores, or depositaries of cold in the milder climates.

By some experiments lately made, it appears that a sudden expansion of strongly-compressed air produces intense cold; and it is well known, that almost all strong currents of air from a cold to a warmer climate, produce, generally, more or less cold, we apprehend upon the same principle.

As moderate cold produces at first debilitating, and eventually bracing effects on the animal body, it is the most beneficial temperature in the cure of diseases attended with excessive heat, particularly those of the febrile kind. The evils attendant on too much heat in a sick room, particularly in the small-pox, measles, &c., are now well known: ventilation and cool air being in such diseases essentially necessary.

The blights occasioned to fruit-trees

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by frost in the spring, are now well known to be produced by the sudden access of the rays of the sun to the frost-bitten blossom, or tender fruit, after a frosty night. The remedy is either to cover the tree during the night with mats to prevent the frost, or, should that be omitted, to cover the tree in the morning after it is frozen, from the immediate contact of the sun's rays, so that the warmth may be gradually restored to it.

For the means of producing great artificial cold, see **FREEZING MIXTURES**.

To restore persons who are apparently dead from cold, the following measures are to be adopted :

When a person has been long exposed to the action of cold, suffering a general numbness, and a sort of intoxication, he quickly falls asleep, and becomes quite insensible. It sometimes happens that he returns to his senses without assistance, but he more frequently dies. Our duty is to remove him to a convenient place, where the necessary aid can be given. If the body be naked it should be covered, but the head left bare. When brought to such a spot, the body should, if possible, be plunged into the snow, and rubbed gently with it, directing the friction from the stomach towards the extremities. In a few minutes after, the friction should be with cloths steeped in cold water, the temperature of which is to be gradually increased ; in a word, *great care must be taken that the body be not heated suddenly*, but slowly, and by degrees.

If neither ice nor snow can be procured, the body must be placed in a bath of cold water, gradually raising the temperature ; and continuing the friction as before directed ; water may also be sprinkled upon the face. The lips and nostrils should be irritated with a feather, or other light substance ; and the lungs must be inflated as mentioned under the article **CHARCOAL**. Volatile alkali, or other stimulating substances, should also be applied to the nose as directed under the article **DROWNING**.

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When the body is restored to a degree of warmth, and the limbs become flexible, it should be placed in a dry, but not warm bed, and be rubbed with a brush. The irritating glyster mentioned under **DROWNING** may now be administered.

When the power of swallowing is restored, we should give some vinegar and water, mint-water, thin broth, or water with a very small quantity of wine. Solid food ought not to be allowed until several hours after complete restoration.

Frozen limbs ought to be treated in the same manner as above ; except that only the parts affected are to be placed in a cold bath, and the friction confined to the same. Six or seven drops of aromatic spirits of ammonia may be given mixed with a little orange-flower water, or with simple water.

COLD, the disease so called. See **CATARRH**.

Cold in Horses. See **CATARRH in Horses**.

Cole, Cole-seed, and Cole-wort. See **RAPE**.

COLIC, a disease of the intestines, distinguished by frequent vomiting, obstinate costiveness, severe griping pains over the whole of the belly, but chiefly about the navel, accompanied by a painful sensation of distention ; the external part of the belly being at the same time drawn irregularly downwards ; there is also a rumbling noise in the bowels, which, as well as the pain, abates on the expulsion of wind ; the pulse is scarcely affected.

It may arise from various causes : from flatulent, or acrid food, or drunk ; from worms ; from the poison of lead ; from costiveness, &c.

In the cure of this malady, almost every Lady Bountiful has her favourite and peculiar remedy. And where the disease, of which we are now treating, is ascertained to be present, such remedies often effectuate a cure. But the symptoms of inflammation of the bowels, or strangulated hernia, are so very similar to it, that much discrimination is necessary to determine to what dis-

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ease the symptoms belong ; and it cannot be too strongly impressed upon the domestic prescriber, that the stimulating medicines which are calculated to remove colic, will materially aggravate and increase the mischief, should the disease be either an inflammation of the bowels, or strangulated hernia. The common practice, therefore, of taking spirituous liquors, or the warm carminatives, when people feel colic pains, is often mischievous, and against which the reader cannot be too much on his guard.

In those cases where other assistance cannot be obtained, and where, from the former occurrence of the symptoms, or other circumstances, the disease is clearly ascertained to be colic, a clyster may be given, composed of a pint of warm fat broth, to which may be added a table-spoonful of common salt ; or the same quantity of gruel, with two table-spoonfuls of castor-oil, and a table-spoonful of soft sugar. If stools are not thereby obtained, a spoonful or two of castor-oil may be taken. The belly should be fomented with flannels wrung out of hot water, and between the times of fomenting, may be covered with one of the flannels, wrung out as dry as possible, over which may be laid a large ox-bladder, nearly filled with hot water.

If these means fail, much circumspection is required as to the next measure to be adopted ; it being necessary to ascertain whether inflammation have taken place or not : for should the complaint be merely colic without inflammation, the cure may be accomplished by some carminative purging remedy,

such as senna tea, with the addition of aniseeds, or a few drops of their essential oil, rubbed with sugar. In flatulent colic, half an ounce or more of tincture of rhubarb has often at once removed the complaint ; or the same quantity of Daffy's elixir ; see that article. But should inflammation have come on, an attention to the state of the pulse must be our principal guide here ; not only must every thing in the shape of stimulants be avoided, but it will be even necessary to employ bleed-

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ing, and that with a considerable degree of freedom. We of course conclude, that here the domestic practitioner will cease to be his own physician, and that an experienced medical man will be immediately resorted to.

As a farther guide to distinguish the *inflammatory* from the *flatulent* colic, we add, that in the flatulent colic the pain comes on by fits, flies about from one place to another, and is much abated by a discharge of wind either upwards or downwards ; but in the inflammatory colic, the pains are equal and fixed to one spot ; the vomitings are severe, and frequently bilious, the belly obstinately bound, and the pulse always quick and feverish. See INFLAMMATION OF THE BOWELS AND CHOLERA MORBUS.

For the treatment of the colic, arising from the use of leaden vessels, paint, &c. commonly called DEVONSHIRE COLIC, the COLIC OF POICTOU, DRY BELLY-ACH, &c. See LEAD.

COLLIQUATIVE, a term very commonly used when we speak of diseases, implying dissolving or wasting : thus colliquative diarrhœa, is a diarrhœa accompanied with great prostration of strength, and frequently alternating with profuse perspirations, which are also termed colliquative sweats. Such colliquative evacuations are always attended with more or less danger, and are often indicative of an approach to the final catastrophe.

COLLYRIUM, a term applied to fluid applications for the eyes, or eye-waters.

COLOCYNTH, *Coloquintida*, or *Bitter Apple*, the fruit of the *cucumis colocynthis*, an annual plant, a native of Turkey, flowering from May till August, and much resembling the cucumber in its foliage.

The fruit is a round berry or pepo, the size of a small orange, yellow, and smooth on the outside when ripe ; it contains many ovate whitish seeds, enveloped by a white spongy pulp : when the fruit is ripe and yellow, it is peeled and dried in a stove, and in this state it is brought to this country ; has no

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smell, but an extremely bitter nauseous taste. The pulp of this fruit is a very powerful cathartic. When given alone, even in moderate doses, it purges vehemently, producing violent griping, bloody motions, and not unfrequently convulsions and inflammations of the bowels. The watery decoction, or the infusion, is much less violent in its operation, and has been recommended in worm cases. It is scarcely ever given alone in any form, but is generally united with other purgatives to quicken their operation. The dose is from four grains to ten, rubbed with almonds or gum, or some farinaceous matter.

The following preparations are ordered by the London College.

Extract of Colocynth. Take of the pulp of colocynth four ounces; of water one quart; boil down to one pint, and strain the liquor while hot; then evaporate to a proper consistence.

This extract is a milder but less powerful cathartic than the pulp from which it is prepared, and with the addition of calomel, forms an excellent purgative pill, which operates without griping. From five grains to half a drachm is the usual dose.

Compound extract of Colocynth. Take of colocynth pulp sliced, six drachms; extract of spiked aloe powdered, one ounce and a half; scammony powdered half an ounce; cardamom seeds powdered one drachm; boiling water, two pints. Macerate the colocynth pulp in the water with a gentle heat for four days; strain the liquor, and add to it the aloe and the scammony; then evaporate it to a proper consistence, and towards the end of the inspissation, mix in the cardamom seeds.

This last extract is an exceedingly useful medicine for relieving the habitual costiveness of leucophlegmatic habits, and in obstinate visceral obstructions, when combined with calomel. The dose is from six grains to half a drachm: one or two grains of calomel added to each dose, frequently make it much more active and effectual.

There is another preparation of colocynth kept in the shops, called *compound*

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colocynth pills, and by the vulgar, **PILLS OF COCCIA**. They are best made thus, according to the Edinburgh College: take socotrine aloes, and scammony, of each in powder, eight parts; of colocynth pulp in powder, four parts; of sulphate of potash in powder, and of oil of cloves, of each one part; mix the whole together, and beat it into a mass proper for pills, with mucilage of gum arabic.

The dose of these pills is from ten grains to one scruple. They are excellent for keeping open the bowels of dyspeptic patients; and are best to be taken at bed-time.

COLOUR, in natural philosophy, that property of bodies which affects the sight only; or that property possessed by the elementary rays of light, separated by any means whatever, of exciting in us different sensations, according to their different refrangibility.

All the colours in nature, proceed from, or are produced by, the rays of light.

That a sun-beam passing through a dense medium, and especially through a triangular prism of glass, gives rise to a series of brilliant tints, similar to those of the rainbow, was known in the earliest ages; but it required the sagacity of NEWTON to develop the cause of the phenomena. He proved that light consists of rays, differing from each other in their relative refrangibilities; and guided by their colour, considered their number as seven; red, orange, yellow, green, blue, indigo, and violet; these are called primary colours. If the prismatic colours, or *spectrum*, be divided into 360 equal parts, the red rays will occupy 45 of these parts, the orange 27, the yellow 48, the green 60, the blue 60, the indigo 40, and the violet 80. Of these rays the red being least refrangible, fall nearest that spot to which they would have passed, had they not been refracted, while the violet rays, being most refrangible, are thrown to the greatest distance; the intermediate rays possess mean degrees of refrangibility. These differently-coloured rays are not susceptible of further decom-

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position by any number of refractions, but when they are collected into a focus, they reproduce a white light.

Upon these phenomena is founded the Newtonian theory of colours, which supposes them to depend upon the absorption of all rays, excepting those of the colour observed. Thus green bodies reflect the green rays, and absorb the others. All the rays are reflected by white bodies, and absorbed by those which are black.

The colour of bodies, therefore, arises from their dispositions to reflect one sort of rays, and to absorb the other: bodies reflecting two or more sorts of rays, are of various colours; the whiteness of bodies arises from their capacity of reflecting all the rays of light; and the blackness of bodies, from their incapacity to reflect any of the rays of light; hence, a black body exposed to the sun, becomes heated much sooner than any other; and hence, also, the obvious advantage of a white dress in the summer season. See **LIGHT**.

Linnaeus informs us, that a *yellow* colour in *vegetables* generally indicates a bitter taste; that *red* denotes an acid, or sour taste; that *green* indicates a crude alkaline taste; that a *pale* colour denotes insipidity; that *white* promises sweet and lusciousness; and lastly, that *black* indicates a nauseous and disagreeable taste. But these indications are not universally to be relied on, although in numerous instances they are, no doubt, correct.

COLOUR MAKING is the art of preparing various colours employed in painting.

Colours are of various kinds: opaque and transparent; oil and water colours; simple and compound; true and false. Opaque colours efface every other painting or stain: such are white and red lead, vermilion, &c. Transparent colours possess the peculiar property of leaving the ground on which they are laid, visible through them. Oil and water colours, are those which are mixed or ground with oil and water, and used in such state for painting.

In preparing oil colours, great care

is to be taken to grind them extremely fine, so that upon being rubbed between the fingers, not the least roughness or grittiness can be felt; and also to mix those which will not dry of themselves with drying oils, sugar of lead, or litharge, &c. Oil colours are sometimes worked dry, where only one is used, as in *cameos*, and in *basso relievos*.

Water colours are either wrought in *distemper*, that is, prepared in size; in *fresco*, or on fresh mortar, in which it is necessary that the colouring be done quickly; in *agouache*, where the colours are mixed with gum; or in *miniature*, in which the colours must be very fine, mixed with gum, and worked in dots or points.

Simple colours are perfect in themselves, such as red and white lead, the oxides of iron, vermilion, &c.

Compound colours are formed by the union of two or more colouring substances, either blue and yellow to make a green; red and yellow an orange; white earth and cochineal a lake, &c.

The most important distinction of colours, however, is into *true* and *false*: the former retaining their hue without fading in every possible situation; the latter losing it entirely, or changing into some other shade.

Colours are principally affected or altered, by being exposed to the sun during the summer, and to the air and other accidents at all times. In London, the colour of paints is materially affected by the gaseous matter contained in the atmosphere: white paint in particular, soon becoming yellow in almost any situation.

The principal colours for paint are the following:

BLACKS. *Lamp-black* is the finest of the soot blacks, and is more used than any other. It is prepared in the large way from the combustion of the common turpentine, or refuse arising from its purification, or from yellow, or black rosin.

Ivory black is prepared from bones burnt in a close vessel, also in the large way. When unadulterated and ground fine, it affords a beautiful black. Ground

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with gum water, or with the aqueous liquid which may be obtained from the whites of eggs, it makes an excellent water-colour black.

Frankfort black and *blue black*, are also used for water colours.

Indian ink consists of equal parts of lamp-black and common glue; it is an excellent black for water colours.

WHITES. *Flake white* and *white lead*, are both preparations of the same metal, and the only whites which can be used with advantage in oil. Ground white-lead is, we are sorry to say, too often adulterated with whiting, or chalk.

Calcined hartshorn is a useful earthy white for water colours, so is *Spanish white*, which is only chalk finely prepared.

Pearl white is made from oyster-shells; *egg-shell-white* from egg-shells: these mixed with metallic, or acid salts, decompose them, and destroy their colours; care, therefore, should be taken to avoid such mixtures.

Magistery of bismuth, flake white, and white-lead, are apt to become black when used as water colours.

RED. The principal red colours are carmine, rose-pink, vermillion, and red-lead.

Carmine is the most beautiful red colour at present known. See **CARMINE**.

Rose-pink is a very delicate colour, inclining more to purple than scarlet. It is prepared from chalk, coloured with a decoction of Brazil wood, with the addition of an alkaline salt. It is very liable to fade, and of little value.

Vermillion is a bright and permanent red, but it does not answer for water-colours. See **CINNABAR** and **VERMILION**.

Red-lead is a well-known and very durable colour. See **RED-LEAD**.

ORANGE paints are red orpiment and orange-lake. The first is formed of arsenic and sulphur; the other may be prepared from turmeric infused in spirit of wine, having its colour struck upon calx of tin, and brightened with a solution of that metal. Different shades of orange may be also prepared by mixing red and yellow colours in different proportions.

The principal **YELLOWS** are King's and Naples' yellow, Dutch pink, the ochres, and turbith mineral, patent yellow, and chrome yellow. King's yellow is a preparation of arsenic, its colour is beautiful, but apt to fade. The basis of Naples' yellow is lead; it, therefore, frequently turns black, and is particularly liable to be spoiled by iron when moist. Dutch pink is supposed to be prepared by striking the colour of yellow berries upon chalk finely levigated. The yellow ochres are well known: for dull yellows, and for making olive greens with Prussian blue, they answer pretty well, but are not permanent. Turbith mineral, or sub-sulphate of quicksilver, is very durable. Patent yellow is an oxide of lead, and a very permanent oil colour. Chrome yellow is a chromate of lead, lately come into use in this country. It is a very beautiful and permanent colour. See **PATENT YELLOW** and **CHROME YELLOW**.

The only simple **GREEN** of tolerable brightness is verdigris and its different preparations: as oil colours, they are, in general, best when ground in turpentine varnish without much, if any, unctuous oil. Green colours of different shades may be made by mixing Prussian blue with the ochres, and other yellows, but such colours are not permanent. Sap green is a water colour in much use: it is made from the juice of buckthorn berries, with the addition of gum arabic and alum. A variety of green water-colours may be obtained from sulphate of copper and lime, or whiting, mixed in various proportions; green verditers are among these. The following is an elegant and permanent colour, when laid on with size, for staining rooms: take of sulphate of copper four pounds; whiting three pounds; water one gallon. Dissolve the sulphate of copper in the water gradually made hot; when it is dissolved add the whiting in fine powder; mix them well together. A sufficient portion of size must be added to prevent its rubbing off the wall. This quantity is enough to colour a room twelve feet square and ten feet high.

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The principal **BLUES** are Prussian Blue, Dutch Blue, Blue Verditer, Smalt, Bice, and Indigo.

Prussian blue may be made thus: take of dried ox blood three pounds; of quicklime four pounds eight ounces; of red tartar two pounds; of salt-petre, (nitrate of potash) one pound and a half. Let them be calcined and lixiviated, when the lye should be poured into a solution of four pounds of alum and one pound of sulphate of iron. These ingredients will produce about half a pound of Prussian blue of a fine quality.

The preparation of the verditers is not publicly known; but both blue and green are, we believe, obtained from lime, whiting, or chalk, and sulphate of copper in different proportions. They are not well calculated for oil colours.

Smalt is glass coloured with zaffre. See **COBALT**. When finely powdered it is nearly equal to Prussian blue.

Bice is prepared from a stone brought from Germany. It has the best body of all bright blues. It should be ground very fine: it is as durable a colour as Prussian blue.

Indigo is not much employed either as an oil or water-colour. It only requires to be washed before it is used. See **INDIGO**.

The only simple **PURPLE** known is colcothar of vitriol, *crocus martis*, or oxide of iron. A fine purple lake may be made from logwood.

The chief **BROWN** colours are bistre, brown pink, and a very common reddish colour, called Spanish brown.

Bistre is prepared from the most glossy, and perfectly burnt soot, powdered and passed through a fine sieve; then baked with a little gum water, and formed into cakes. This is a useful and permanent colour. Brown pink consists of chalk tinged with the colouring matter of fustic with an alkaline salt; but it is very fugacious.

COLOURING MATTER exists in almost all the flowers, leaves, and roots of vegetables. To obtain the colouring matter from any vegetable the following process may be adopted.

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Take the roots, leaves, or flowers in any quantity you please, bruise them nearly to a pulp, put them into a glazed earthen vessel, pour a sufficient quantity of pure water over them, and add a table-spoonful of a strong solution of pure potash to every pint of water. Boil the whole over a moderate fire till the liquor is evidently saturated with the colour of the vegetable; then decant the fluid part through blotting paper, or a cloth, and gradually drop into it a solution of alum, when the colouring matter will subside; this should be washed in several fresh waters, till they come away tasteless. It should be once more filtered through paper, and the remaining substance perfectly dried. Such colouring matters make the finest pigments, or water-colours, by rubbing them on marble stones with clear gum-water, and then drying them into drops, cakes, &c.

COLT implies the produce of a horse and mare, of either gender; but in sporting and horsemanship the term colt is confined to the male foal, while the female is called a filly. For the method of rearing colts, see **HORSE**; for the age of colts, see **AGE**.

COLT'S-FOOT, or *Tussilago*, a genus of plants consisting of twenty-one species, chiefly natives of Europe and America; one or two of Japan; and two only natives of our own country, which are

The *Farfara*, or common colt's-foot, a perennial plant, growing in moist, marley, and clayey soils. It flowers in March and April, and the leaves appear in May and June. The root is long and creeping, and sends up stems destitute of leaves, five or six inches high: the flower droops before it blows, but afterwards becomes erect and is of a golden yellow; the leaves are smooth, green above, with reddish veins, but underneath white and woolly. The leaves, which are more frequently employed in medicine than the flowers, should be gathered and dried when they are fully expanded, before they have attained their greatest magnitude. They are inodorous when dried, and have a

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rough mucilaginous taste. They give out their virtues to boiling water.

Colt's-foot has been considered as demulcent from the earliest ages; and it is still occasionally used in cough, and other complaints of the chest, but its powers are of no great importance. A decoction made by boiling a handful of the dried leaves in two pints of water to one pint, and after being strained, sweetened with sugar-candy or syrup, and given to the quantity of a tea-cupful for a dose, is the best and usual method of exhibiting it.

This plant is sometimes a troublesome weed in arable lands. The best method of destroying it is to pull it up by the roots, in the months of August, September, or October, after the crops of corn are cut, at which time it is at its full growth, and easily discovered. In order to its effectual extirpation, the same plan must be pursued every autumn for a few years.

The *Petasites*, or BUTTER-BUR, also a perennial plant, found in wet marshes, and the sides of ditches, and in meadows; the flowers and stalks soon wither, and are succeeded in May by very large, roundish, or somewhat heart-shaped leaves, hollowed, so as to resemble a bonnet. The root is long and thick, brownish or black on the outside, and white within, of a strong smell and acid taste; it has been recommended as aperient and alexipharmonic, but is not now in medical use.

There is a variety of this species described under the name of *tussilago hybrida*. It is of no importance whatever.

COLT'S-FOOT, ESSENCE OF. A medicine well known to the British public, and generally believed by the uninformed to be prepared from the plant called Colt's-foot. It has, however, not an atom of colt's-foot in its composition, but is merely the **PAREGORIC ELIXIR**; or, as it is now called by the London College, *Compound Tincture of Camphor*, and by the Edinburgh College, *Camphorated Tincture of Opium*. See **CAMPHOR**.

COLUMBINE, or *Aquilegia*, a genus of plants containing five species,

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natives of Europe, Canada, and Siberia.

The *Vulgaris*, is said to be a native plant growing in hilly woods and thickets. It is, however, well known in gardens as an ornamental flower, consisting of several varieties, blue, purple, white, violet, &c. &c. It is perennial, but is propagated by seeds, and will grow almost any where. It seems to possess no other properties but its various colours to recommend it.

Columbo. See **CALUMBA**.

COMA, in medicine, a propensity to sleep, or rather, to remain in a state of stupor, with the eye-lids often partially, or sometimes wholly, open. Coma is a symptom attendant on many diseases: it frequently indicates danger.

COMB, an instrument made either of horn, ivory, tortoise-shell, wood, or iron, to adjust the hair, and also for many other purposes.

Combination. See **ARTIFICER**.

COMBUSTION, in chemical and natural philosophy, denotes the decomposition of certain substances accompanied by light and heat. The process of combustion, the various phenomena which it exhibits, its astonishing effects, its infinite uses, and its devastations, have at all times rendered it a most important object of human attention. Combustion not only implies the destruction of such materials, as wood and coal by fire, but also the decomposition of the gases, the diamond, metals, &c. when light and heat are evolved.

COMBUSTION, **SPONTANEOUS**, the more common causes of which, such as friction, the heat produced by the slacking of lime, in contact with combustible matter, the fermentation of hay, of dunghills, and of similar matter, are well known.

But, besides these common causes, experience has shown that many vegetable substances highly dried and heaped together will heat, and at last burst into flame. Of these, the most remarkable is a mixture of the expressed oil of the farinaceous seeds, as rape or linseed oil, with almost any dry vegetable fibre, such as hemp, cotton,

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matting &c.; and still more if also united with lamp-black, or carbonaceous substances. These mixtures, if kept for a time undisturbed in close bundles, and in a warm temperature, even in small quantities, will often heat and burn with a mouldering fire for some hours, and, if air be admitted freely, will then burst into flame. To this, without doubt, may be attributed several accidental conflagrations in store-houses, and places where quantities of these substances are kept. It appears that lamp-black being mixed in such cases with the other materials, considerably forwarded the combustion; but the presence of lamp-black, or any other dry carbonaceous matter, is not necessary to produce spontaneous inflammation: for it will take place in hemp or cotton simply soaked in any of the expressed oils when in considerable quantity, or under circumstances favourable to this process, as in very hot weather, or when closely shut up. We have not room to detail the various experiments which have been made to verify the facts of spontaneous combustion; nor can we detail the numerous accidents which have arisen from a mixture of such combustible materials. The truth of their occurrence is indisputable; and we can, therefore, only caution our readers from suffering either wool, cotton, hemp, or flax to be heaped together in large quantities; and above all, not to permit any of the expressed oils, such as linseed or rape-oil, to come in contact with them. Nor are these articles the only ones which suffer spontaneous combustion. Even rye-flour, roasted till of the colour of coffee, wheat-flour, when heated in large quantities and highly dried, and charcoal alone, have been known spontaneously to take fire.

Some well attested facts are also related of the spontaneous combustion of the human body in persons addicted to the use of ardent spirits. And although such accidents are of rare occurrence, they furnish an additional argument for the moderate use of these highly stimulating and combustible liquors.

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COMFIT, corrupted most probably from *confect*, is a kind of sweetmeat prepared by the confectioner, and consists in encrusting coriander seeds, caraway seeds, almonds, cinnamon, cassia, &c., with a kind of white saccharine paste, and afterwards drying it in an oven. As such paste is commonly composed of sugar and raw flour in various proportions, it is scarcely possible to conceive a mixture more likely to ferment in the stomach, and therefore comfits ought to be avoided by all dyspeptic patients. But comfits are not always composed of such harmless ingredients as these: according to Mr. ACCUM, in his *Treatise on the Adulteration of Food*, comfits are sometimes made with a mixture of sugar-starch and pipe-clay; and the red sugar drops are coloured with vermilion, which is too often adulterated with red-lead. Comfits, and other sweetmeats, are sometimes rendered poisonous by being coloured with preparations of copper. Those comfits, therefore, of a green colour, ought more especially to be guarded against and avoided.

COMFORT, a term of frequent occurrence in domestic economy, implying that pleasant state of bodily and mental feeling produced by rooms of equable warmth, by suitable clothing, food, &c., and by various other stimuli, both mental and corporeal, which keep the functions in a state of agreeable activity, but which is attended with no violent emotion whatever. It is said that the term comfort, in this acceptation, is not understood by any European nation except ourselves. This is possibly true; and we very much suspect that Englishmen in search of many of their domestic comforts of the personal and corporeal kind, expose themselves to a variety of unpleasant feelings, and diseases, to which those who have neither warm nor carpeted rooms, nor wooden floors, are total strangers. For suitable clothing in the different seasons we are great advocates; but healthy exercise or labour in the open air, is ill supplied by sitting in those comfortable apartments of our towns; and

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the robust activity of our ancestors, by the sedentary employments of the counting-house, or the vitiated atmosphere of a crowded theatre.

COMFREY, or *Symphytum*, a genus of plants containing three species as follow, all of which are cultivated. The *Officinale*, or common comfrey, is perennial, and found wild on our wastes. The stem is two or three feet high. Flower yellowish white, sometimes purple. There are many varieties, differing principally in the colour of the flower. The roots are mucilaginous, and of the same nature as marsh-mallow roots. The *Tuberosum*, or tuberous-rooted comfrey, rises a foot and a half high; has pale yellow flowers. Found wild in our own country. The *Orientele*, or Oriental comfrey, with stalks two feet high, and blue flowers in branches like the first, appearing in March, but seldom producing seed in this country. Found near Constantinople.

The mucilaginous parts of the common comfrey is employed by colour-makers; it is also employed to correct the brittleness of flax, and the roughness of wool in spinning. It is said also, that a decoction of the root is of great importance in the process of tanning.

COMMERCE, a generic term, implying all those transactions in society in which goods, wares, or merchandize, are bought, sold or exchanged.

Commerce is divided into commerce by land, and commerce by sea; inland, or domestic and foreign; and also into wholesale and retail. With respect to domestic commerce, we may observe, that the King in this country, is, by his prerogative, entitled to direct many things concerning it: to him it belongs to establish public marts, as markets and fairs, to regulate weights and measures, to give money, which is the almost universal medium of commerce, authority and currency. A great part of the foreign commerce of England is now carried on by collective companies: some incorporated by the King's charters with exclusive privileges, as the East India Company; others only private associ-

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ations, as the Turkey, and Hamburgh company, &c. But the injurious monopolies of extensive companies are in many instances very apparent. And relative to the East India Company, an act was passed in 1813, which opened the East India trade to the British people at large, after the 10th of April, 1814, subject, however, to certain exceptions and restrictions, the principal of which are, that the sole and exclusive right of trading to and from the dominions of the Emperor of China, and the whole, sole, and exclusive right of trafficking in tea, in, to, and from all places between the Cape of Good Hope and the Straights of Magellan, are to continue in the East India Company for a further term of twenty years.

The commerce of Great Britain has been gradually augmenting for a series of years past. Its present extent may be estimated by the consideration that the value of the exported produce was, in the year ending January 1819, 44,504,014 pounds sterling; of foreign and colonial produce, 12,285,274 pounds, making a total of 56,849,318l. In the year 1792, the value of our exports was only 24 millions.

In a moral view, however, of this extraordinary trade, its utility admits of considerable question. The accumulation of great wealth in the hands of a few individuals is, we fear, not very congenial to the moral well-being and happiness of the mass of the population of any state. It is certain however, that the accumulation of individual wealth, affords considerable stimulus to the ingenuity and talents of man; but we think that after a series of severe lessons, which, in the lapse of ages, man will be obliged to learn, the happiness of the whole body politic will neither consist in the individual accumulation of wealth, in ploughing the seas for gain, nor in the congregated masses which now inhabit our cities; and that a return to the AGRICULTURAL state, combined with the knowledge and experience obtained in cities, will be found the best means of insuring national as well as individual happiness.

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COMMISSION of BANKRUPTCY, is that issued by the Lord Chancellor, on persons becoming bankrupt within any of the statutes, and directed to certain commissioners, who are appointed to examine into and secure the bankrupt's lands and effects for the satisfaction of his creditors.

No commission of bankruptcy can be issued unless upon the petition of a single creditor to whom the bankrupt owes a debt which shall amount to one hundred pounds, or upwards; or the debt or debts of two or more being partners, shall amount to one hundred and fifty pounds, or upwards: or where the debt or debts of three, or more, shall amount to two hundred pounds. The petitioners are bound in a security of 200*l.* to make the party amends in case they do not prove him a bankrupt. And if they receive any of the bankrupt's money or effects as a recompense for suing out the commission, so as to obtain more than their due proportion of his estate, they forfeit the same, together with their whole debt.

On receiving their commission, the commissioners first ascertain whether the bankrupt was a trader within the meaning of the bankrupt laws, and had committed an act of bankruptcy; and if so proved, declare him bankrupt, give notice in the gazette, and appoint three meetings for the creditors. At one of these meetings are chosen by a majority (in value) of creditors, the assignees, or persons in whom the bankrupt's estate shall be vested for their benefit. And at the third meeting, which must be on the forty-second day at farthest after the advertisement in the gazette, (unless the time for his surrender be especially enlarged) the bankrupt, on notice being served personally on him, or left at his place of abode, must surrender himself to the commissioners, and thenceforth conform, in every respect, to the directions of the statutes of bankruptcy; or, in default thereof, he is guilty of felony, without benefit of clergy, suffers death, and his effects are divided among his creditors.

On his examination, if he give a false

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statement, or conceal any property to the amount of 20*l.*, or withhold any books or writings in order to defraud his creditors, he is also guilty of felony without benefit of clergy. But if the bankrupt has made a true discovery, and in all things conformed to the directions of the act, he may, with the consent of his creditors, obtain a certificate. If the commissioners certify his conformity, and the same be allowed by the chancellor, his person, and whatever property he may afterwards acquire, will be discharged and exonerated from all debts owing by him at the time he became bankrupt. But no bankrupt is entitled to the benefit of the act unless *three parts in five*, both in number and value of his creditors, who shall be creditors for not less than 20*l.* respectively, and who shall have duly proved their debt under the commission, or some persons duly authorized by them, shall sign the certificate.

There are a variety of other regulations relative to a commission of bankruptcy, which we have not room to, nor is it necessary that we should, enumerate. For further particulars, **COOKE'S Bankrupt Laws** may be consulted.

COMMON, an epithet applied, on a variety of occasions, to things and qualities which are general and well known.

That which is most common, particularly in the natural world, is generally the best, and intrinsically the most valuable, such as air, water, light, &c. It is to be regretted that many things not common are too often valued merely from their scarcity, and nothing else. Even gold is not so intrinsically useful and valuable as iron; and the diamond, on which so large a price is usually set, is of still less intrinsic value than gold: such extrinsic value is little less than absurd.

COMMON-LAW. The common-law of England is defined to be the common rule for administering justice within the kingdom, and asserts the King's royal prerogatives, and likewise the rights and liberties of the subject. It is generally the law by which the determinations in the King's ordinary

courts are guided. It is distinguished from the statute law, or acts of parliament, as having been the law of the land before any acts of parliament which are now extant, were made. It is called in our law books, the *lex non scripta*, or unwritten law; in contradistinction to the statute law, or the *lex scripta*, the written law. We are sorry, however, to remark, that the common-law is too often a labyrinth which serves only to perplex and confound not only common sense, but even the lawyers themselves.

COMMON-PLACE BOOK, is a register of what things occur worthy to be noted in the course of a person's thinking, or study, and so disposed as, that among a number of subjects, any one may be easily found. The advantages of a common-place book are many; it not only makes a person read with accuracy and attention, but induces him, insensibly, to think for himself. Many valuable thoughts occur, even to men of no extraordinary genius. These, without the assistance of a common-place book, are generally lost. A common-place book, besides, by writing, induces attention to thoughts which would otherwise escape the memory for ever. Many sentiments, when read, are often soon forgotten; when written they remain in the memory during life.

COMMONS, are waste lands or pastures, the use of which are common to the villages or towns in their vicinity.

The inclosure of commons has been often pressed upon the attention of the legislature, as a remedy for some of the social evils under which this country has from time to time laboured. But, notwithstanding, during the last twenty years, the inclosure of commons has been very extensive in Great Britain, we do not find the pressure of the evils complained of removed. And, indeed, we think there is no doubt that the peasantry, who forty years ago kept geese, and occasionally a cow, were a more happy and a more moral race than the present generation, who are deprived of the advantages of such pastures.

COMPANY, in morals, one of the

most powerful instruments in the formation of human character. From what has been said under **GOOD-BREEDING**, **CIRCUMSTANCES**, **CHARACTER**, and other articles in our work, it can be scarcely necessary to enforce again here the doctrine, power, and influence of association. He, however, who is seriously bent upon the formation of such a mind as will most contribute its own individual, as well as social well-being and happiness, cannot be too cautious in choosing the company with which the young mind in particular should mix. If the reader should be a parent, it will be more particularly imperative upon him, to take care that those circumstances only should surround his child, which are most likely to mould his mind to benevolence, to virtue, and to truth.

COMPARATIVE ANATOMY is the dissection of other animal bodies than those of man, to compare with them the human. It is a study of great importance, not only to the medical and surgical pupil, but also to every one who is desirous of enlarging the sphere of his knowledge relative to animated nature. By comparative anatomy we are taught that there are at least as many tribes of animals which have no heart whatever, or, at least, none adapted to a general circulation, as there are of those which have both heart and arteries, actually necessary for the circulation of the blood; and that immense numbers of animals have neither muscular fibre nor nerve. That the double hearts of mammals and birds produce the double circulation of the blood; first from the heart through the lungs, and next from the heart through the remainder of the body. Yet the same double circulation is produced in amphibians and fishes, and many inferior animals who have nothing more than a single heart; that is, nothing more than a single auricle and ventricle; and in others where there is no heart whatever; the propelling power being altogether of a different description, and yet as competent to the fulfilment of its object as that resulting from an arterial systole and diastole.

COM

The heart of fishes, moreover, propels the blood, not through the system at large, but only through the lungs, or bronchia; while the snail, on the contrary, has what may be called a corporeal, but not a pulmonary heart: it propels the blood by means of an auricle, or ventricle, over the system, but has no heart for the lungs; while, again, the coleopterous insects (that is, those which have four wings, the outside hair appearing like shells) and in perhaps all others possessed of wings, the single heart, or auricle and ventricle, operates in both directions, and is sufficient to produce of itself the same kind of double circulation that is traced in man, quadrupeds, the cetaceous tribe, and birds, by the machinery of a double heart. In such insects, moreover, both the lungs and heart are equally diffused through the whole length of the body; while in man and other mammals, both the lungs and heart are confined to the chest. See ANATOMY.

COMPASS, an instrument used chiefly at sea, to ascertain the north point of the horizon. It consists of a circular brass box, which contains a paper card, with thirty two points or divisions of the circle, fixed on a magnetic needle, which always turns to the north, excepting a variation at different places. The needle with the card turns freely on an upright pin fixed in the centre of the box. The top of the box is covered with a glass, that the card's motion may not be disturbed by the wind. The names of the principal points are as follow: north, south, east, west; north-west, south-west, north-east, south-east; north-north-west, north-north-east, south-south-east, south-south-west; east-north-east, east-south-east; west-north-west, west-south-west.

Pocket compasses are now contrived, which are very convenient, particularly in exploring large tracts of inland country.

The *Variation* of the compass is of considerable importance in navigation, and other calculations. It is believed that the variation performs a kind of periodical motion: for in 1576 it was 11

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degrees, 15 minutes east at London; in 1657 at London, the needle pointed directly north; and from that time to the present, it has been gradually moving to the westward; in 1700 it was 10, 42 west; and in 1818 it was 24.36 west; at which time it was supposed to have attained its ultimate variation westward; it is now either stationary, or about returning again towards the north. This variation and retrogradation, are found, however, to vary in different places.

COMPASS is also a very convenient instrument, made either of iron or brass, for the purpose of describing circles, &c.

COMPASSION, in morals, is that species of affectionate feeling, which is excited either by actual distress, or impending calamity. Compassion forms a distinguishing feature of the benevolent mind: indeed, genuine benevolence is ever accompanied with compassion.

COMPLEXION in the human subject, implies the colour of the face and the skin. The difference in the complexions of the various races of mankind, has not been to this moment satisfactorily accounted for. The principal complexions are black, swarthy, copper coloured, red coloured, brown coloured, brownish, and white. The principal blacks are found in Africa, between the tropics, in New Guinea and New Holland; the swarthy in North Africa, and in South Africa; the copper coloured in the East Indies; the red coloured in various parts of America; the brown coloured in Tartary, Persia, Arabia, China, and the coasts of Africa, bordering the Mediterranean; the brownish inhabiting the southern parts of Europe, Lapland, and other countries towards the north pole, and Abyssinia; the white inhabiting England, Sweden, Denmark, Germany, Poland, Circassia, Georgia, and the islands of the Pacific Ocean. Of these various complexions, it is pretty generally agreed, that the whites of Europe possess the best talents: but whether these talents and the complexion be the effect of certain habits and education,

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through a long series of generations, or other causes, is not easy to determine.

Many persons, ladies in particular, attempt to improve their complexions by the use of cosmetics, which are continually, and unblushingly advertized as beautifiers of the skin : most of which are either worthless, or if they have any effect, it is that of conveying mercury into the constitution, and too often laying the foundation of diseases which are frequently dangerous, and sometimes fatal. We advise our fair readers, who have been in the habit of using cosmetics, to throw them at once away, and to be persuaded that the best cosmetics are exercise in the open air, an active attention to a variety of social and domestic duties, regular hours of repose at night, and a cheerful hilarity, the constant attendant on health, will not fail to animate their countenances, and beautify their complexions.

COMPOST, in agriculture and gardening, a mixture of earth, sand, lime, dung, and various other substances, designed to promote vegetation. See **HUSBANDRY**, and **MANURE**.

COMPRESS, in surgery, is an application to prevent a wound from bleeding or swelling, as well as in the treatment of aneurisms, ruptures, indolent tumours, and ulcers. It consists generally of folded pieces of linen, or cotton cloth, or calico, so contrived, as to make a gentle pressure upon the part ; and occasionally moistened with certain liquors, such as alcohol, vinegar, &c.

Compresses are frequently used where no plasters are required : it frequently happens that ulcers in the legs, accompanied with more or less tumefaction, are best cured by moderate compresses from the knee to the ankle ; indeed, it has been found where little or no tumefaction is apparent, that such compresses have been manifestly advantageous. The application of such bandages, however, requires much care, in order that the pressure on the limb may be equable, and that no violence be done to the sensations of the patient, or to the surrounding parts.

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Compression of the Brain. See **CONCUSSION OF THE BRAIN**.

COMPUNCTION, in morals, a state of mind accompanied with pain, in consequence of a consciousness of having acted wrong : it is similar to remorse. See **REMORSE**, and **CONSCIENCE**.

CONCEIT, that disposition of the human mind which arrogates to itself more talent than it actually possesses, or which sets an exorbitant value on what it does possess, and at the same time undervalues the talents of others. Conceit appears to be a compound of vanity and pride ; it is frequently the attendant on a narrow and confined education : extensive knowledge of, and acquaintance with mankind, is the best cure for it.

CONCUSSION of the **BRAIN**, a disease arising from such injury of that organ, by external violence, or accidents, as either obstructs or destroys its functions, without leaving behind it such marks as to allow its nature to be ascertained by dissection. Most of the symptoms attending **COMPRESSION** of the brain, occur also in **concuSSION** ; but in a compressed state of the brain, they are more permanent. In **concuSSION** of the brain, there is no discharge of blood from the eyes, nose, or ears, which frequently happens in **compression** ; and instead of that apoplectic stertor in breathing which accompanies **compression**, the patient seems to be in a sound and natural sleep. The pulse is irregular and slow in **compression**, and grows stronger and fuller by blood-letting. There are besides convulsions in **compressions**, which are not observed in a state of **concuSSION**. The symptoms arising from **concuSSION** come on immediately after the injury is received. In the violent degrees of these, the patient remains quite insensible, the pupils of the eyes are much dilated, and do not contract, although the eye be exposed to the strongest light. In more violent cases of **concuSSION** it is, however, extremely difficult to distinguish between **concuSSION** and **compression**.

In doubtful cases, blood-letting, there-

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fore, should be practised with great caution. If the pulse become fuller and stronger after discharging a moderate quantity, if the blood appears ized, and especially if the patient become more sensible, blood-letting may be repeated; but if, after drawing a few ounces of blood, the pulse become feeble, and the patient more weak, blood-letting must be relinquished, and such remedies given as may support and strengthen the patient: cordials internally, and stimulants externally. Wine may be given proportioned to the degree of debility; and if the patient complain of coldness, he must be kept warm by proper covering; a blister may also be applied to that part of the head where the skin has been injured; mustard cataplasms may be applied to the feet; gentle laxatives are also necessary; and they should be regularly given, so as to keep the body open. If the patient cannot swallow wine, the volatile alkali, brandy, and other stimulants, in moderate doses, may be given. Issues, or frequent repetition of blisters to different parts of the head and neck may also be of service. During a recovery from accidents of this kind, a liberal use of bark, iron, and other tonics is of advantage. When much languor, inactivity, and loss of memory continue, electricity long applied has been attended with advantage. But this remedy, as well as most of the others which we have mentioned, should not be applied when any symptoms of compression or inflammation of the brain be present.

Persons who have suffered under concussion of the brain, often exhibit some of the symptoms of the complaint for ever after: one of which is that of apparent intoxication, from the drinking of ardent spirits, or fermented liquors, so that it is often difficult for a stranger to distinguish between the two diseases.

CONDUCTOR, a term used in electricity to denote those substances which are capable of receiving and transmitting the electric fluid. All metals, ores, and all fluids, except air and oils, together with the substances con-

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taining them, the effluvia of flaming bodies, ice, unless very hard frozen, snow, most saline and stony substances, charcoals, of which the best are those which have been exposed to the greatest heat, smoke, and the vapour of hot water, are more or less conductors.

The utility of *conductors*, or rods, for protecting buildings from the effects of lightning, is universally admitted. One of the best conductors is a rod of iron, or rather copper, as being a better conductor of electricity, and less liable to rust, about three quarters of an inch thick, which is either to be fastened to the walls of a building by wooden cramps, or supported by wooden posts at the distance of a foot or two from the wall; though less may do; the upper end should terminate in a pyramidal form, with a sharp point and edges; and when made of iron, gilded or pointed near the top, or else pointed with copper; and it should also be elevated five or six feet above the highest part of the building, or chimneys, to which it may be fastened. The lower end is to be driven five or six feet into the ground, and directed away from the foundations of the building, or continued till it communicates with the nearest water; and if this part be made of lead it will be less apt to decay. When the conductor is formed of different pieces of metal, care should be taken that they are well jointed: and it is further recommended that a communication should be made from the conductor, by plates of lead eight or ten inches broad, with the lead on the ridges and gutters of the house, and with the pipes that carry down the rain water, which should be continued to the bottom of the building, and be made to communicate either with water, or moist earth, or with the main pipe which serves the house with water. If the building be large, two or three, or more conductors should be applied to different parts of it in proportion to its extent. It sometimes happens that the tops of such conductors are melted off by a stroke of lightning: to obviate this, a piece of black lead, which is a good conductor

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of electricity, and infusible by the greatest heat, has been recommended, to be taken out of a good black-lead pencil, and about two inches of it fixed in the middle of the end of the conducting rod, and the very point of it formed with the black-lead.

CONFECTION, a name now given in the London Pharmacopœia to several medicines composed of powders, and other substances, mixed up with sugar, syrup, or water, to the consistence of an electuary. Some of these were formerly, and now are, in the shops frequently called **CONSERVES** and **ELECTUARIES**.

The principal confections are the following:

Aromatic confection, formerly *Cordial confection*, is made thus: take of cinnamon bark, and nutmegs, of each two ounces; of cloves one ounce; of cardamom seeds half an ounce; of saffron dried two ounces; of prepared oyster-shells sixteen ounces; of refined sugar powdered, two pounds; of water a pint. Rub the dry substances mixed together into a very fine powder; then add the water gradually, until the whole be thoroughly incorporated.

This medicine is an excellent stimulant and cordial. It is given with advantage in many complaints of debility, particularly those attended with laxity of the bowels. Combined with small doses of opium, it is almost a sovereign remedy in simple diarrhœa. The dose is from ten grains to one drachm.

Confection of Opium, formerly called *Philonium*. Take of hard opium powdered six drachms; of long pepper one ounce; of ginger root two ounces; caraway seeds three ounces; syrup of sugar one pint. Rub the opium with the syrup made hot, then add the remaining articles reduced to powder, and mix the whole together.

This medicine is a useful succedaneum for the *Venice Treacle*, and *Mitridate* of the old dispensatories. It is a stimulant narcotic; and is usefully employed in atonic gout, stultent colic, and diarrhœas unattended with any inflammatory symptoms. Thirty-six grains contain one grain of opium.

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The usual dose is from ten grains to half a drachm, given in the form of a bolus, or diffused in the chalk mixture.

Confection of Senna, formerly *Lenitive Electuary*: Take of senna leaves eight ounces; figs one pound: tamarind pulp, cassia pulp, the pulp of prunes, of each half a pound; coriander seeds four ounces; liquorice root three ounces; lump sugar two pounds and a half. Powder the senna leaves with the coriander seeds, and separate by sifting ten ounces of the mixed powder. Boil the residue with the figs and liquorice root in four pints of water, until it be reduced one half; then press out and strain the liquor. Evaporate the strained liquor in a water bath, until a pint and a half only remains of the whole; then the sugar being added make a syrup. Finally, mix gradually the pulps with the syrup; and having added the sifted powder, mix the whole together.

This is a well-known, mild, and pleasant purgative; and well adapted for those afflicted with habitual costiveness, and for pregnant women. The dose is from one drachm to four or more, taken at bed-time.

For other confections, see **CONSERVES**.

Congelation. See **ICE**.

Conger-eel. See **EEL**.

CONSCIENCE, that faculty of the understanding by which we judge of the moral qualities of ourselves or of our actions. Relative to this subject a considerable error is very prevalent amongst persons who have not maturely and deliberately examined into the nature of conscience; it has been too commonly supposed that if, in any given situation in morals, a person were always to follow the *dictates of his conscience*, that he would unquestionably act right. We believe that a more dangerous error cannot pervade the human mind. If the doctrine of morals which we are inculcating in this work have any foundation in truth, and of its truth we entertain no doubt, then the faculty of the human mind, called conscience, must vary, as we find it does, in different individuals, in exact accordance with the education and other

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circumstances by which they have been surrounded ; and hence it follows that what one person refuses to do or does with repugnance, another will do without remorse and without shame ; if this were not the case, and if the same conscience pervaded and influenced the mind of every individual, the different moral conduct of different persons would be totally inexplicable. The practical conclusions which we are desirous of enforcing from this view of conscience is, that no individual should assume, from the dictates of his own conscience *merely*, that his actions are right. In a variety of instances, it is true, self-consciousness frequently decides rightly, but in numerous others very wrong. Whenever, therefore, in morals, a person suspects his own judgment, and on this subject we ought constantly to be on our suspicious guard, the counsels of an intelligent, discreet, and able friend or friends, will often be of incalculable importance. We may add that public opinion in numerous instances is a good criterion as to the propriety or impropriety of moral conduct ; but in others it is grossly erroneous.

CONSERVE, in medicine, a composition of some recent vegetable, and sugar, beat together into a uniform mass, about the consistence of honey. The following conserves, now called *Confections*, why we really cannot tell, are ordered by the London College.

Conserve of Oranges, is made by first breaking into a pulp one part of the exterior bark of a fresh Seville orange, separated by rasping, then adding three parts of powdered lump-sugar, and beating them both well together. It may be taken at pleasure ; but it is a very convenient vehicle for giving bark, iron, and other tonic medicines in the shape of boluses.

Conserve of the Dog-rose, commonly called *Hips*. Take of the pulp of the berries of the dog-rose, thoroughly ripe, one pound ; lump-sugar in powder, twenty ounces, rub them together till they are incorporated.

Conserve of the Red Rose. Take the fresh unblown flowers of the red

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rose, carefully freed from the seed and the white-bottoms of the flower leaves, one pound ; of lump sugar in powder, three pounds ; beat the flowers in a stone mortar, then add the sugar, and beat again, till they are both thoroughly incorporated. This conserve is prepared in the large way by passing the rose buds through a wooden mill adapted to the purpose, by which the labour of beating them to a pulp is considerably abridged.

The two last conserves are convenient vehicles for active remedies ; their medicinal powers are not of much importance. The conserve of the red rose is however somewhat astringent.

CONSTABLE, a peace officer belonging to those divisions of counties termed in England Hundreds. Constables of hundreds were first ordained in the time of Edward I. for the conservation of the peace. Two were ordered to be chosen for every hundred. These are now called High Constables ; and are usually chosen and sworn into office by the justices of the peace in their sessions. There are also petty constables, called in some places tything-men, who take cognizance of the peace in their own immediate district : they are all subject to the high constable.

Many persons are exempted by law from serving the office of constable : these are the ancient officers of any of the colleges in the two Universities, counsellors, attorneys, and all other officers whose attendance is required at Westminster-hall ; Aldermen of London ; the President and Fellows of the Fellowship of Physic in London ; surgeons and Apothecaries in London, and within seven miles thereof, being free of the Company of Apothecaries ; but this indulgence is generally extended to medical men in all other parts of England : licensed teachers or preachers in holy orders, in a congregation legally tolerated, are also exempt from this office.

CONSTIPATION, that state of the bowels when the contents, or a part of them, are not expelled daily, and when the fæces are so hardened as to

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be discharged with more or less pain and inconvenience.

CONSTITUTION, in politics, implies the whole arrangement and apparatus of a government, as laid down and established in either written or well-known laws, usages, and customs.

The constitution of this country consists of a King, Lords, and Commons; it is also divided into the Legislative, the Executive, and the Judicial. The principal documents to which Englishmen are accustomed more immediately to refer as bulwarks of the constitution, besides various laws which have been from time to time enacted to maintain and secure it, are **MAGNA CHARTA**, the **BILL OF RIGHTS**, and the Act of **HABEAS CORPUS**. See these articles respectively.

CONSTITUTION, in medicine, and in a general sense, means the whole structure and functions of the human body, and is nearly synonymous with **SYSTEM**. In a more confined sense it implies that peculiarity of structure, existing more or less in different individuals, and called by medical practitioners *Idiosyncrasy*, in which one person is affected by certain stimuli or medicines, which, applied to others, produce no effect at all: thus, some people cannot see a finger bleed without fainting; and thus violent inflammation is produced on the skin of some persons by substances which are perfectly innocent in others. The study and knowledge of these constitutional differences, are of great importance in medicine: indeed, it is impossible for any person to become a good physician without them.

It is said that a great alteration in the constitutions of the inhabitants of Europe has taken place in the course of a century or more; that inflammatory diseases occur less frequently, and in general are less rapid and violent in their effects than they were formerly. This, we admit, may in part be true; but we suspect that the increased knowledge of medicine and disease which is now more generally spread abroad, has had a great share in the alteration of the medical practice of Europe; and

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that the lancet was then too frequently had recourse to, when a very different practice ought to have been adopted. That congregating in large cities has a mischievous effect on the human constitution, there can be, we think, no doubt; but that *Tea* in particular is so very injurious, as asserted by some writers, we must deny. The increased consumption of ardent spirits and wine, are more probable causes. The abstraction of the wholesome stimulus of pure air, light, and healthy labour in the country, and the removal to the noxious air of crowded and smoky cities, are, however, in our estimation, quite as likely to be primary, if not the principal causes of the diseases of debility and ennui, under which so many of the children of affluence, in particular, are constantly and painfully labouring in this luxurious capital.

CONSUMPTION, a term applied to various diseases incident to the human body. The principal diseases, however, of the consumptive kind, are those in which the lungs are diseased. See **PULMONARY CONSUMPTION**, **HECTIC FEVER**, and **ATROPHY**.

CONSUMPTION, in **HORSES**. In this complaint there is a gradual loss of flesh and strength, while the appetite generally continues. Sometimes it is accompanied by a discharge from one or both nostrils, and a swelling of the glands under the jaw; such cases are generally mistaken for glanders. Consumption often attacks colts which are kept in poor marshy land, and exposed to rain and easterly winds. Horses of all ages are liable to it, and it is said that the most common cause is that which produces cold or catarrh; that is, exposure to cold when heated by exercise. It does not take place suddenly, but is very insidious in its attack; the complaint is frequently not noticed till tubercles are formed in the lungs, and the mesenteric glands diseased.

When a colt is observed to become thin, his coat staring, and his skin feeling as if glued to his ribs, he should be immediately taken from grass, put into the stable, and fed with bran mash

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and oats. He should not be tied up, but be suffered to run loose in a box or open stable, and by no means be kept very warm. After a short time, when he appears to have gained a little strength, a mild dose of physic may be given, and repeated after an interval of ten or twelve days. These means being pursued, if the disease have not made great progress, it will be arrested ; and if the season of the year is such that good grass can be procured, it will perfect his recovery ; but great care is required in turning him to grass. He should have an opportunity of shelter, at least by night. In more advanced stages of this disease, there is little or no chance of a cure, although bleeding, small doses of nitre, calomel, and tonics, have been advised. Horses which die of this complaint have not only tubercles in the lungs, but an enlargement of the mesenteric glands : and the mesenteric artery is often enlarged to six or even ten times its natural size.

CONTAGION, or INFECTION, is produced by the very subtle particles arising from putrid or other substances, or from persons labouring under contagious diseases which communicate the disease to others. There does not appear to be any proper distinction between contagious and infectious diseases ; and hence an indiscriminate use of these terms, which are nevertheless sometimes employed in different acceptations by some medical writers, has produced some misconception and confusion ; but it is not our business to discuss the propriety of the use of these terms.

The most erroneous notions generally prevail even among persons of every degree, relative to the nature and propagation of contagion. It is believed to be a poison capable of floating through the atmosphere, around the dwellings of the infected or the hospitals which contain them, and thus to contaminate the very air which we breathe, and spread disease and death to those who pass by, and even to the neighbouring districts. These opinions, and

the terrors connected with them, are as equally unfounded and absurd as are all the creations of an over-excited imagination, magnified by prejudice and alarm : for it has been proved, beyond the possibility of doubt, that no contagion whatever is communicable, even to the distance of a few feet, through the medium of the free and open atmosphere, and consequently that residence in a district where contagious fever prevails, is free from all danger. Nay, that the house, and even the apartment occupied by the sick, may be rendered perfectly harmless ; the contagion being easily disarmed of its virulence and activity by dilution with pure air and other means of preventing its accumulation.

All pestilence is therefore only propagated by a near approach to the diseased or by actual contact, or by the conveyance of the contagious person in articles impregnated with it, the clothes in particular ; it not being communicable even to the distance of a few feet through the air ; and there are many well-attested facts to prove that even the plague itself is propagated only by such contact or close approximation. In short, to render contagion communicable, it must be condensed and accumulated in a confined and unchanged atmosphere ; or in the apparel or bedding, which has been long in contact with the patient. Under these circumstances it becomes sufficiently virulent to inflict disease on any one at all predisposed to receive it, who comes in contact with it, or remains long enough in that situation to inhale, or imbibe, through the cutaneous absorbents, a sufficient dose of the poison.

It must be equally manifest, however, that the means of security, even from this hazard, are completely within our power : for to prevent the accumulation and concentration of the virus, is necessarily to disarm it of its deleterious agency. This may be done by a free and regular ventilation of the apartment in which the patient is confined ; by a frequent change of the bed and body linen, and ablution of the skin, and by the speedy removal of all the

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excretions. Where these principles are steadily pursued in detail, the most malignant fever may exist in the very bosom of a family without extending to another individual.

It seems scarcely necessary to dilate upon the practical execution of principles so clear and simple as those just stated; but as upon such a subject we can be scarcely too explicit, we add here the substance of the excellent rules proposed by Dr. HAYGARTH, and to which too much publicity cannot be given.

The door of an apartment in which a patient lies ill of fever, more especially in small houses, should be kept always open, and the window or windows likewise, in warm or temperate weather during the day, and occasionally during the night. At all seasons, indeed, however cold, the occasional refreshment of the air of an apartment, by an open window, even during the night, is proper. For the same reason, the curtains should not be drawn round the bed except a part sufficient to shade the patient's eyes from light. Visitors and attendants should also avoid the direct current of his breath, or the exhalations from his body, or from his evacuations; or if obliged to come into close contact with them, should maintain a temporary suspension of the breath. The linen of the patient's person and bed should be frequently changed; that which is removed immersed immediately in cold water, and afterwards washed, and all the discharges should also be speedily removed.

VENTILATION and CLEANLINESS alone, therefore, are adequate to the effectual prevention of the propagation of infection in any dwelling; and the freshness and freedom from all sensible taint which they produce in the atmosphere of the room is the best test of the absence of all noxious matters.

The use of camphor, tobacco, rosemary, odoriferous pastils, and even of vinegar, is to be deprecated, inasmuch as they are totally useless, and might conceal the presence of deleterious effluvia. The vapours of vinegar, indeed,

may possess some feeble power of destroying contagion, as well as those of sulphur, which, however, are not respirable. The only substances which decompose and destroy contagion, and which, therefore, may be resorted to with a view to purify portions of the atmosphere, which ventilation may fail to reach, or substances which cannot be washed, are the *vapours of the mineral acids*.

The simplest, and best mode of fumigation, is the following: take equal quantities, byweight, (about six drachms) of powdered nitre and strong sulphuric acid (oil of vitriol); mix them in a tea-cup, stirring them occasionally with a tobacco-pipe, or piece of glass; the cup must be removed, from time to time, to different parts of the room, and the fumes will continue to arise for several hours.

If common salt be used instead of the nitre, the vapours of the muriatic acid will arise in like manner; but as they are more offensive to the respiration than the vapours of the nitric acid, this mode of fumigation is less eligible.

It may be observed by way of caution in the use of these acid vapours, that all articles of steel or iron should be removed, or effectually covered during their employment, as such articles will become speedily coated with rust.

The operation of heat alone appears to be capable of destroying contagious matter, whence baking, or inclosing in an oven, clothes, and other articles impregnated with it, has been recommended.

Upon the whole, relative to contagion, it appears that it is always found most virulent and destructive in the filthy and confined dwellings of the poor, particularly in the crowded lanes and alleys of large cities, and that even in such places with cleanliness and ventilation, the mischief arising from it is rendered comparatively harmless. See the able Treatise of Dr. BATEMAN on *Contagious Fever*. See also INFECTION, SMALL-POX, PLAGUE, and TYPHUS.

CONTAGIOUS, MALIGNANT PUSTULE. Butchers, tanners, farmers, sheep-

CONTAGIOUS MALIGNANT PUSTULE

herds, veterinary surgeons, and all workmen who handle the wool or skin of dead animals in which putrefaction has commenced, are subject to contract this complaint, if they have not taken the precaution to wash immediately, and with care, all the parts of their bodies which have touched the parts corrupted. Two varieties of this disease have been observed; the prominent and the depressed pustule. The first is attended with troublesome itching, confined to a circumscribed spot without redness, heat, or tension of the skin; a sharp, transitory, prickly sensation is also felt, and by degrees a small blister is formed of the size of a millet seed, which quickly increases, and becomes brownish, and two or three drops of a reddish fluid escapes, when the itching ceases for a few hours. A small moveable tumour is then formed, little blisters arise round the central one which was first formed; the whole tumour becomes ultimately hard, insensible, gangrenous, and black, accompanied by a considerable swelling of the neighbouring parts.

If the patient be strong and robust, the treatment methodical, and early commenced, an abundant suppuration arises, removes the eschar, and the disease terminates favourably; but in weak persons the disease continues to make a rapid progress, and the infection becomes general. The skin of the patient is dry, the tongue parched, the pulse contracted, and more or less frequent, the thirst intolerable, with nausea and pains in the stomach; and sometimes the respiration is short and interrupted with sobs and hicough. If the disease continue to its latest term, derangement of the mind takes place, the local symptoms increase in violence, the swelling becomes enormous, and the patient dies in a state of gangrene, diffusing a most fetid smell.

The depressed variety of this complaint is more dangerous than the prominent.

In the treatment of this disease we have only to circumscribe, in as small a space as possible, the little tumour,

which is the focus of the gangrene, and has the greatest tendency to extend itself to the surrounding parts; scarification and caustics are employed with great success to effect this object: internal remedies are not always necessary.

Scarifications are not indeed sufficient to cure the disease, but are useful in favouring the action of other remedies.

Among the caustics, butter of antimony, oil of vitriol, lapis infernalis, and the actual cautery, are to be preferred. But their employment, as well as the scarifications, must be modified according to circumstances. Indeed, as in this complaint scarcely any person would venture on the cure of it without the advice and assistance of an able surgeon, it can be scarcely necessary to enlarge upon it. We describe the disease and its consequences as matter of precaution.

We may add, however, relative to the internal treatment, that during the first and second period of the disease, lemonade, or vinegar and water, are, in general, sufficient; the patient should, at the same time, abstain from stimulating food. In the third period, if the pulse be small and trembling, with sudden twitching, and the swelling hard and compact, an opiate should be given. If, on the contrary, the pulse be loose, the swelling soft and extensive, retain the mark of the finger, and the eschar moist, the acidulated decoction of bark, described below, must be given. The patient ought to observe the most strict regimen: old wine, however, or beer mixed with water, and lemonade, may be useful. If the patient has much nausea, his tongue white with a thick, soft, and moist fur, and if there be a yellow deposit in the urine, give an emetic; but if the tongue be red, and loaded with a dry, black, and scaly crust, and the urine deposit no sediment, omit the emetic. For the nausea in this last case give the acidulated decoction of bark.

The following remedies will be found useful in this disease.

A stimulating digestive: Take of

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honey one ounce ; of verdigris in fine powder two drachms ; of powdered myrrh one drachm ; the yolk of one egg. Mix the whole well together. This ointment hardens the eschar ; when it is soft, and tending to putrefaction, its activity may be increased by the addition of two drachms of spirit of turpentine, or by adding more verdigris.

A *Collyrium*, with which the wound may be washed : Take of white-wine eighteen ounces ; prepared orpiment two drachms ; verdigris four drachms ; myrrh forty-eight grains. Reduce these to a fine powder, and add the wine by degrees.

Brandy is also a useful lotion for such wounds.

A *Decoction*, in which the compresses may be steeped, is to be made thus : Boil in a quart of water a handful of one or other of the following : elder flowers, chamomile flowers, leaves of balm, mint, or water germander ; to which add one-fourth part of brandy, and two ounces of common salt, or sulphate of potash. Sal ammoniac is not to be used.

Camphorated liniment : Take of camphor one ounce ; the yolk of two eggs. Let these be well rubbed together, and then add two ounces of honey.

Anti-putrid decoction : Take of Peruvian bark one ounce ; camphorated spirits of wine four ounces ; common salt half an ounce. Boil the bark in a quart of water, and add the other substances. Cloths may be steeped in this and applied to the whole limb.

Acidulated decoction of bark : Boil one ounce of bark in a pint and a half of water to a pint, and strain ; then add two ounces of syrup of lemon, and some sulphuric acid, drop by drop, till the fluid becomes pleasantly acidulated. Give a glass of this decoction every three hours, or even more frequently, if symptoms of putridity be very manifest.

CONTENT, or **CONTENTMENT**, the acquiescence of the mind in that portion of good or of happiness which we actually possess. It implies a perception that our situation in life might have

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been better, or that it is inferior to what others enjoy, or that it does not fully answer the expectations which we had formed. One of the most powerful reasons, however, for the cultivation of such a state of mind, is the conviction that every thing, both in the natural as well as the moral world, proceeds in a certain order ; that there is no effect without a cause ; and that when we become anxious and unduly solicitous about any worldly good, particularly if such good be not, in probability, attainable, we suffer ourselves to be uselessly disturbed, and forget, very often, the calm enjoyments which a contented mind places within our reach : content, we may add, consists in diminishing as much as possible our wants, and in guarding against the increase of our desires.

Deduct what is but vanity or dress,
Or learning's luxury, or idleness ;
Or tricks to show the stretch of human brain,
Mere curious pleasure, or ingenious pain ;
Then see how little the remaining sum
Which served the past, and must the times to come !

POPE.

CONTRACTIONS OF THE LIMBS.
The contraction of the various muscles of the body is generally the consequence of some other disease, as the rheumatism, gout, scurvy, or palsy. It is exceedingly difficult of cure ; though the Bath waters are commonly found of the greatest service. These are not only taken internally with suitable regimen to invigorate the system ; but they are also projected by a pump upon the affected part, and sometimes the whole body is immersed in the bath. Electricity also, occasionally, has performed surprising cures in this way. The usual mode of applying it is by small shocks, strong sparks, or what is called electrical friction, where the ball of a charged jar is rubbed over the part affected, whilst a piece of coarse flannel is interposed. Some contracted limbs have been restored by plunging them every day into hot brewers' grains, and afterwards bathing the parts principally affected with Neat's-foot oil, in which a

small portion of camphor has been dissolved. We do not know that the powers of galvanism have been applied to the living subject in contractions: but we think that they may be so applied, under proper management, with probable effect. See **ELECTRICITY** and **GALVANISM**.

CONTRAYERVA, or *Dorstenia Contrajerva*, a perennial plant, a native of Mexico, Peru, and some of the West India Islands. The roots only of this plant are known in medicine. They are stimulant, sudorific, and tonic; and are occasionally given in malignant eruptive diseases, dysentery, and diarrhœa. They are also useful in atonic gout, chronic rheumatism, and the fever attending dentition in weak infants. The dose of the powdered root is from five grains to one drachm; but it is more frequently used with other medicines. A *Compound Powder of Contrayerva*, composed of five ounces of the powdered root of contrayerva and one pound and a half of prepared oyster-shells rubbed together, is ordered by the London College. This powder is stimulant and sudorific, and is given with advantage in typhous fevers, dysentery, and atonic gout. The dose is from ten grains to forty, given either in simple water, or rubbed up with mucilage and mint-water.

Contusion. See **BRUISE**.

Convulsus. See **BINDWEED**.

CONVULSIONS are diseased actions of the muscles of animals, particularly of the human body; they are distinguished by alternative relaxations, with violent and involuntary contractions of the muscular parts, without sleep.

When convulsions attack only particular parts of the body, they are generally attended with some kind of paralysis at the same time, by which means the parts affected are alternately convulsed and relaxed; a permanent convulsion, or unnatural contraction of particular muscles, is called a *spasm*, or *cramp*. These partial convulsions may attack almost any part of the body: and are not unfrequently symptomatic

in fever, cholera morbus, &c. The involuntary startings of the tendons, the pricking of the bed-clothes, &c., in acute diseases, &c., are all convulsive symptoms.

Convulsions, not only of particular parts, but of the whole body, often take place from causes not very evident. Delicate women are often subject to hysteric convulsions, and so also are hypochondriacal persons. Convulsions, however, often arise from wounds, irritations of the stomach and intestines by worms, poisons, violent cathartics and emetics, &c.; and very often they are symptomatic as in dentition, the small-pox, and many kinds of fever.

Convulsive disorders, with very few exceptions, are always to be dreaded; but less in young people than in such as are advanced in life. Those which attack girls under the age of puberty, will generally cease on the appearance of the menses; and boys have likewise a chance of being relieved as they advance in life; but in grown up persons, unless the cause be evident, a cure is hardly to be expected, especially if the disease have continued for some time.

The treatment in the cure of convulsions, is much the same as in **EPILEPSY**, which see. See also **CRAMP**, **HYSTERIA**, **HYPOCHONDRIASIS**, **SPASM**, &c.

When infants are attacked with convulsions, and their lives depend on an immediate remedy, the best thing those persons having the immediate care of them can do, is to immerse them in a vessel of warm water, of about the heat of 96 or 98 degrees of Fahrenheit's thermometer for fifteen minutes; and if medical assistance be not at hand at the end of that time, the child may be taken out, rubbed with warm flannels; and if the convulsions should commence again, let it be again plunged into the warm bath, and kept there for the same, or even a longer period. See **DENTITION** and **INFANCY**.

COOKERY, the art of dressing or preparing food. Although we do not design this work to be a succedaneum for a cookery book, yet, inasmuch as a

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just knowledge of the principles of cookery should be known by every domestic economist, we have under the article **BOILING**, as well as many others in our work, endeavoured to point out the best means in which food can be made most suitable for the human constitution. It is to be lamented that the writing of cookery books should be left to those persons who have no scientific skill whatever; hence the variety of unwholesome and incongruous recipes and directions with which such books abound. It is not consistent with our plan to enter more at large on this subject here. A variety of practical directions for cooking will be found under the articles **BREAD**, **BREWING**, **BOILING**, **OVEN**, **ROASTING**, **STEAM**, &c., to which we refer.

COOMB, a measure of corn containing four bushels.

COOT, or *Fulica*, a genus of birds, containing twenty-five species. They frequent waters, feed on worms, insects, and small fishes; the body is compressed, bill thick, and bent in towards the top, the upper mandible reaching far up the forehead; wings and tail short. The gallinules have the feet cleft, the upper membranaceous at the base, and the wings concave. The coots have the toes surrounded by a scolloped membrane, the mandibles equal, nostrils oval, narrow, and short. The gallinules therefore are distinguished by cleft feet; the coots by pinnate feet. We describe them both under **COOT**, to avoid unnecessary reference; and shall offer some of the principal specimens of each.

The *Chloropus*, or Moor-hen, common Gallinule, called in some places of England Moor Coot, has a blackish body, or sooty mixed with olive, beneath ash colour, sides red. Inhabits Europe and America: fourteen inches long; flies with difficulty, but runs and swims well; builds near the water-side, on low trees or shrubs; strikes with its bill like a hen; lays seven dirty-white eggs, thinly spotted with rust, twice or thrice a year; abounds in the fenny districts of England; flesh delicious.

The *Purpurea*, or Crowing Galli-

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nule, is purple, inhabits the marshes of New Spain, and crows like a cock.

The *Porphyrio*, or Purple Gallinule, inhabits most temperate and warm places; fifteen inches long; is docile and easily tamed; stands on one leg, and lifts the food to its mouth with the other; feeds on fishes, roots, fruits, and seeds. Flesh said to be good.

The *Atra*, or Common Coot, of which there are five varieties; one with a blackish body; another black with white wings; another entirely black; another brown, but the chin, belly, and primary quill feathers white; head spotted with white, and upper mandible red; another white, with a few spots on the head and wings.

This species inhabits Europe, Asia, and America; fifteen inches long, frequents lakes and rivers, and forms a floating nest among the rushes; lays numerous dirty white eggs, sprinkled with minute rusty spots; the young when hatched very deformed; runs along the water, swims and dives dexterously; feeds on small insects, fishes, and seeds; in winter often repairs to the sea.

The *Aterrima*, or Greater Coot, with a blackish body; inhabits, like the last, our own country, and other parts of Europe; and scarcely differs from it but in increased magnitude, and in the deepness of its black colour.

Cooling medicines. See **REFRIGERANTS**.

Copaiba, or *Copaiva*. See **BALSAM**.

COPAL, or as it is sometimes improperly called, **GUM COPAL**, is a resinous substance imported from Guinea, where it is said to be found on the sand on the shore. It is in large lumps or drops, hard and brittle, of a yellowish colour, faintly glistening, and semi-transparent. It is almost tasteless, and while cold inodorous. It is used dissolved in rectified spirits of wine, or other solvents, chiefly for making an excellent tenacious varnish. Its use in medicine is unimportant.

The secret of dissolving copal effectually for the purpose of varnish, is in very few hands. It may be dissolved

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rectified spirits of wine, oil of turpentine, linseed oil, the oils of rosemary and lavender, and some other menstua; but not without heat, and some other processes and additions. See the two following articles.

COPAL-TREE, *Elæocarpus*, a genus of trees containing five species, natives of India, America, or New Zealand, of which the *Copalliferus*, with leaves entire, and terminal parricle, is supposed to yield the resin called gum copal.

COPAL VARNISH. The following is recommended as one of the best methods of preparing this article: provide a strong vessel made of tin, or other metal, and having a handle strongly rivetted to the neck: it should be shaped like a wine bottle, and capable of holding two quarts; the neck should be long, and have a cork fitted to the mouth, but a notch or small hole should be made in the cork, that when the spirit is expanded by heat, a small portion may force its way through the hole, and thus prevent the vessel from bursting. Dissolve half an ounce of camphor in a quart of spirit of turpentine, and put it into the vessel; take a piece of copal the size of a large walnut; reduce it to a coarse powder, or very small pieces, put them into the tin bottle, fasten the cork down with a wire, and set it as quickly as possible upon a fire, so brisk as to make the spirit boil almost immediately; keep it boiling very gently for about an hour, when so much of the copal will be dissolved as will make a very good varnish; or, if the operation has been properly begun, but not enough of the copal has been dissolved, it may again be put on the fire, and by boiling it slowly for a longer time, it may be at last brought to the consistence desired.

COPPER, or *Cuprum*, a metal of a fine red colour, and much brilliancy; it is very malleable and ductile, and has a peculiar smell when warmed or rubbed. It melts at a cherry red, or dull white heat. Its specific gravity is 8.8. It easily tarnishes in the air. It is soluble in most acids, exhibiting a blue colour. Thirty two species of

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copper ore have been discovered, of which the oxides, chlorides, sulphurets, sulphates, phosphates, carbonates, and arseniates are the most remarkable. The metal may be obtained perfectly pure, by dissolving the copper of commerce in muriatic acid; the solution being diluted, and a plate of iron immersed in it, the copper will be precipitated upon the iron: it may be fused into a button.

Native copper occurs in a variety of forms, massive dendritic, granular and crystallized in cubes, octoëdra, &c. It is found in Great Britain, Siberia, Saxony, Hanover, Sweden, and America.

The principal parts of Great Britain which afford copper, are the counties of Cardigan, Chester, Cornwall, Cumberland, Derby, Devon, Northumberland, Lancaster, Salop, Somerset, Stafford, York, Warwick, Westmoreland; the islands of Man, and Anglesey; and also Scotland. The sulphurets are the most abundant ores; and those from which the metal is usually extracted. The ore is first roasted to volatilize the sulphur which is collected in chambers, connected by flues with kilns. It is then smelted in contact with the fuel in a large reverberatory furnace to separate the iron, which being less fusible than the copper, remains in the scoria, while the melted copper is drawn off through a plug-hole into earthen moulds. The copper is then remelted, granulated, and lastly refined by being melted again with a little charcoal, when it becomes fit for the various purposes of art. When it is exposed to humidity and to air at the same time, it is tarnished, and a green crust is formed on its surface, which is a carbonate of copper.

Copper is applied to various purposes in the arts and manufactures. Many of the alloys of copper are also important. With gold it forms a fine yellow ductile compound, used for coin and ornamental work. Sterling, or standard gold, consists of eleven parts of gold, and one of copper. The specific gravity of this alloy is 17.157. With silver it forms a white compound, used for plate and coin. Lead and copper require a high red heat for union, the

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alloy is grey and brittle. (See gold and silver.) Brass, bell-metal, and bronze are also alloys of copper; the first being copper and zinc; the next, three parts copper, and one tin; and the latter eight parts tin, with one hundred copper, (see BRASS and BRONZE.) *Pinchbeck* is also an alloy of copper and zinc, in which the last amounts to about 25 per cent.

Vessels of copper used for culinary purposes, are usually coated with tin, to prevent the food being contaminated with the copper. Their interior surface is first cleaned, then rubbed over with sal ammoniac. The vessel is then heated, and a little pitch or rosin spread over the surface; a bit of tin is then rubbed over it, and it instantly unites with and covers the copper.

Copper is dissolved by a variety of acids, and forms with them many useful, as well as poisonous compounds, such as SULPHATE OF COPPER, or BLUE VITRIOL, VERDIGRIS, &c. which see.

Although copper in its metallic state was used as a medicine by the ancients, it is discarded from modern practice; and notwithstanding so much has been said of its deleterious effects, there is good reason for believing that clean copper, when taken into the stomach, exerts no action whatever in the human body. But POISONING, from the use of copper utensils in cookery, arises either from the *green carbonate of copper*, mentioned above, owing to the vessels not being well cleaned, and the food being allowed to stand for some time in the pan exposed to the air after it is taken from the fire; or from the formation of *verdigris*, when vinegar in making pickles, and other acid liquors, intended for internal use, is boiled in brass or copper vessels. The salts of copper thus formed are poisons, exciting inflammation of the stomach; and many fatal accidents have arisen from the practices which produce them, and the equally dangerous mode of giving a fine green colour to vegetables, by boiling halfpence with them; on

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which account copper utensils should be altogether banished from the kitchen and every culinary process.

The salts of copper may be detected in any suspected liquor, by placing in it a piece of clean polished iron, on which the copper, if any, will be precipitated in a metallic state; or by dropping into it a solution of ammonia, which produces a beautiful blue colour, if any salt of copper be present.

The following preparations of copper are all poisonous when taken into the stomach, even in small doses; they may, however, be externally applied without any other result than local inflammation: blue copperas, the muriate, the nitrate and crystallized acetate of copper, commonly called distilled verdigris; the sub-acetate, or common verdigris; the sub-carbonate, or natural verdigris; the oxide of copper, or the rust which forms on copper exposed to air, ammoniacal oxide, hydrochlorate, (muriate of copper and ammonia,) For the effects of taking these poisons internally see CORROSIVE SUBLIMATE.

It results from various experiments, that when any of these poisons have been taken into the stomach, the best remedy is white of eggs. Sugar has been also recommended, and it may be useful. Liver of sulphur, alkalies, gall-nuts, Peruvian bark, charcoal, &c. are useless, often dangerous, and ought therefore not to be administered. The treatment of a person who has swallowed verdigris or any salt of copper, is to be the same as that directed under corrosive sublimate, to which we refer.

COPPERAS, a name given to three metallic salts of very different properties. GREEN COPPERAS is composed of iron and the sulphuric acid, now called sulphate of iron; BLUE COPPERAS of copper and the same acid, now called sulphate of copper; WHITE COPPERAS of zinc and the same acid, now called sulphate of zinc. GREEN COPPERAS is, however, sometimes called copperas alone. The term copperas is altogether a very improper one; and should be avoided by all correct speak-

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ers. See COPPER, IRON, and ZINC; and also the respective articles in the order of the alphabet.

COPYING MACHINES, or **POLYGRAPHS**, for copying recent writings, have been invented by Mr. WATT; Mr. BELL; Mr. WEDGWOOD; Mr. HAWKINS, and Mr. BRUNEL; for all of which inventions patents have been, we believe, obtained. These machines are of different degrees of merit. Hawkins' *Polygraph* consists of two pens placed in a frame, and connected by joints, so that when any motion is given to the one pen, the second pen performs a similar motion. This apparatus can be packed in the form of a portable writing desk.

Of all the methods, however, for copying writing, the palm must, we think, unquestionably be given to LITHOGRAPHY, lately invented, and now coming into use. See that article.

COPYHOLD, a tenure of lands for which a tenant has nothing to show but the copy of the rolls made by the steward of the lord's court. It is held not, however, simply at the will of the lord, but according to the custom of the manor, by which such estate is descendible, and the tenant's heirs may inherit; and a copyholder, so long as he does his services, and does not break the custom, cannot be ejected by the lord; or if he shall be, he shall have trespass against him. These, and many like customs in England, are the remains of the feudal system so long prevalent through Europe: it is to be regretted that even these have not been long ago abolished.

CORAL, called by some naturalists *ISIS*, is a peculiar substance found in the ocean resembling vegetables in its structure, and by some persons considered as a vegetable: by others as an animal production; to which of the two it belongs it is not easy to decide. LINNÆUS names the different kinds of coral *Corallinæ*; but a more recent nomenclature, *CORALLINIADÆ*; they are arranged under eleven genera, with several species and varieties.

The *Acetabularia* with a long distinct

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stalk, is very common in the West Indian seas. The *Polyphysa* is found in the New Holland seas, and only one species, the *Australis*. The *Udotea*, fan-like, is found in the hotter parts of the American ocean. The *Nesca*, is found in the American seas attached to rocks by long fibrous roots; when living, green; when dried, whitish. The *Galaxaura*, inhabiting the Indian Seas. The *Jania*, of the New Holland seas. The *Corallina*, found generally on rocky shores, attached to rocks, or to the marine plants of rocks. The *CORALLINE*, or Sea moss, *Corallina officinalis*, is the most common species of this genus. It was formerly used in medicine as an absorbent, but now rejected. The corallinæ are of a beautiful reddish or purple colour, which they lose after death, and when exposed to the action of the sun and air, assume a variety of tints. The *Cymopolia*, the *Amphiroa*, the *Halimeda*, and the *Melobesia*, are the remaining genera. The last inhabits the European seas, and is attached to marine plants.

Coral is found of various colours; red, white, and black. Its principal use is for beads. Many islands in the Pacific ocean are composed entirely of coral.

Coralline. See CORAL.

CORD, a combination of several threads of hemp, flax, silk, &c. twisted together by a wheel or other machinery. See ROPE.

CORD, OF WOOD, a certain quantity of wood for burning, so called, because formerly measured with a cord. The dimensions of a statute cord of wood are, eight feet long, four feet high, and four feet broad.

CORDIALS, are those medicines or liquids, such as wine, brandy, &c., which possess warm and stimulating properties, and which are given to raise the spirits.

CORDS, a disease incident to young calves which often proves fatal. Calves which suck the cows are not so liable to this disease as those reared by the hand and confined to the house from their birth. It is of a very inflammatory

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nature ; the animals die red, with a general appearance of a contraction of the sinews, whence the name cords. To prevent this disease, the black matter contained in the first excrement may be purged off with syrup of buckthorn, or rhubarb in gruel. On the access of the disease, give as much antimonial powder as will lie on a sixpence ; or, in extreme danger, tie the legs of the calf and immerse him, except the head, in a tub of warm water, and keep him there as long as comfortable warmth remains in the bath, then rub him completely dry in every part, and put him in a deep bed of straw. This bathing, if needful, may be repeated. If this disease be the result of obstructed intestines, as perhaps it is, a timely dose of rhubarb or magnesia may obviate it.

CORIANDER, or *Coriandrum*, a genus of plants containing two species ; the *Testiculatum*, with fruit double, found in the south of Europe ; and the *Saticum*, with globular fruit. They are both annuals.

The *Saticum*, or common Coriander, is a native of Italy, but now found wild in some parts of this country, owing to the abundant cultivation of it for medicinal and other purposes. It flowers in June, and the seeds ripen in August. The stem is erect, branching, and about two feet in height. The flowers are white or reddish. The whole plant when green has an abominably foetid odour if bruised, which extends to the fruit.

The dried seeds have a grateful aromatic odour, and a moderately warm pungent taste. They are carminative and stomachic, and are sometimes used in flatulencies, but principally to correct the griping qualities of some cathartics. The dose of the bruised seeds is from one scruple to a drachm.

Coriander seeds are used by the confectioners in large quantities ; being encrusted with sugar they are called coriander comfits. See **COMFITS**.

CORINTH, a term long since corrupted into *Currant*, the name of a small dried raisin, formerly brought

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from Corinth, and well known in domestic economy. See **CURRENT**, and **RAISIN**.

CORK, a stopple for a bottle or a cask, cut from the bark of the cork-tree. The larger kind of corks are usually called bungs. The term cork also designates the bark itself, which is used for a variety of important purposes.

CORK-TREE, or *Quercus Suber*, a species of oak, a native of the south of Europe, and rising to thirty or forty feet in height, with a thick, tough, fungous, cleft bark, and ever-green, ovate-oblong, downy underneath, and undulate leaves. The common and useful material called cork, is the outer bark of the tree, which is not destroyed, by being carefully deprived of it ; on the contrary, a new coating, fit for the same purpose, is completed once in six or seven years.

CORK-JACKET, or waistcoat, for the purpose of supporting the human body in water, should be made thus ; Take four pieces of cork, two for the breast, and two for the back, each being cut nearly of the same length and breadth as the quarters of a common waistcoat, without flaps ; the whole must be covered with coarse canvas, having two holes to put the arms through. Spaces are to be left between the two back pieces, and each back and breast piece, that they may be more easily adjusted to the body. Thus the waistcoat will be only open in front ; it may be fastened with strings ; or, if it should be thought more secure, with buckles and leather straps. The weight of this waistcoat does not exceed twelve ounces.

It is obvious, that besides this method of making a cork-jacket, shavings of cork, stuffed into a waistcoat within the linings, will answer quite as well, and perhaps much better, as the softness of the shavings will adapt the jacket to the body with more convenience to the wearer. See **SHIPWRECK**.

CORKINGS, are points or other projections formed in one or both heels of the shoes of horses, and particularly in the shoes of the hinder feet, to pre-

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vent their slipping. These projections are often had recourse to in travelling in frosty weather, but they affect more or less the motion of the horse, and should never be adopted unless the horse is worked in such situations which render it absolutely necessary: and then it is advisable that the outer heel only should be turned up, and that the inner heel be made thicker than the toe and quarter, so that both heels may be equal in height.

Cormorant. See PELICAN.

CORN, in rural economy, the grains or seeds of plants which grow in ears, and chiefly used for making bread; such as wheat, rye, barley, &c. Beans and Pease are, however, often called corn. For a particular account of the cultivation of corn, see the various articles in the order of the alphabet. See also BAKING, BREWING, and HUSBANDRY.

Corn-calc. See Mustard.

Corn-chaffer. See WEEVIL.

CORN-COCKLE, or *Agrostemma*, wild lychnis, a genus of plants containing four species. The *Githago* or common field cockle, adds much to the beauty of our arable grounds; the *Coronaria*, or rose-campion: the *Flos-ovis*; and the *Celi rosa*, all which are elegant ornaments to our flower gardens; the last is an annual, though of great beauty.

Corn-flower. See BLUE-BOTTLE.

Corn Land. See HUSBANDRY.

CORN-LAWS. It is against the common law of England to buy or sell corn in the sheaf, before it is thrashed and measured.

Every person who shall sell or buy corn without measuring, or otherwise than the Winchester measure, sealed and stricken by the brim, shall, on conviction before one justice, on the oath of one witness, forfeit forty shillings, besides the whole of the corn so sold or bought, or the value thereof, half to the poor, and half to the informer.

The laws of this country to regulate the exportation and importation of corn have been various, and varying according to the exigence of the moment, or

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other causes. It is not consistent with our work to notice the different Acts which, during somewhat more than a century, have demonstrated the fickle and uncertain policy of those persons who have had the direction of the domestic economy of the state. It is, however, necessary to mention here, that in the year 1814, Committees of both Houses of Parliament were appointed to examine evidence, and to report the state of the corn-trade; and a great number of the most eminent agriculturalists were examined. The witnesses were unanimous in this only, that the protecting prices fixed in 1804, were insufficient to enable the farmers to make good the engagements into which they had subsequently entered, and to continue the cultivation of the inferior lands lately brought into tillage. In consequence of this a series of resolutions were submitted to the House of Commons, on February 17, 1815, recommending that foreign corn, meal, or flour, be permitted to be imported into the United Kingdom, for home consumption, without payment of any duty, whenever the average prices of the several sorts of British corn, made up and published in the manner now by law required, shall be at or above the following prices, viz: wheat 80s. per quarter; rye, pease, and beans, 53s. barley, bere or bigg, 40s; oats 26s; but that whenever the average prices of British corn shall respectively be below the prices above stated, no foreign corn, or meal or flour made from any of the respective sorts of foreign corn above enumerated, shall be allowed to be imported or taken out of warehouse for home consumption. A variety of minor regulations were recommended in these resolutions, amongst which an exception in favour of the corn of our British colonies in North America, and of permitting its importation when the average prices of British corn should be at or above the following prices: wheat 67s. per quarter; rye, pease, and beans, 44s; barley, bere or bigg, 33s; and oats 22s.

These resolutions having been agreed

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to by the House, a Bill founded on them was, after a very violent opposition, carried in both houses by immense numbers, and finally passed into a law. 55th Geo. III. c. 26.

It is scarcely necessary to add, that the great body of the nation, although at the present moment quietly acquiescing in the measure, do not conceive such prohibitory laws conducive to the general welfare; and even the farmers themselves have admitted that the law is calculated for the landlord rather than for the tenant.

CORN-MEASURE. The English dry, or corn-measure, consists of pints, gallon, pecks, bushels, and quarters. A pint is 33·6 cubic inches; a gallon is eight pints; a peck two gallons; a bushel four pecks; and a quarter eight bushels. See **CORN-LAWS** and **BUSHEL**.

CORN-SALAD, *Valeriana locusta*, or lamb's lettuce, is an indigenous annual plant, the leaves of which are occasionally used for salad. Sheep, and Canary-birds, are fond of this vegetable.

CORNEA, the sclerotic membrane of the eye, so called because it is of a horny consistence. It is distinguished by anatomists into two portions, one is called the opaque cornea; and the other the transparent, because through it the rays of light pass to the retina. It is the outermost coat of the eye, of a white colour, dense and tenacious, except the middle and transparent part above mentioned. It is into this coat of the eye that the muscles of the bulb are inserted. See **EYE**.

CORNEL-TREE, Dogwood, or *Cornus*, a genus of plants consisting of twelve species, natives of Europe, Asia, or America, of which two are indigenous to our own country. The species chiefly found wild, and occupying our hedges is

The *Sanguinea*, or Common Dogwood, with an upright tree stem, ten or twelve feet high, straight branches, and ovate leaves, green on both sides; the flowers are white, succeeded by black berries. The wood is hard, and employed in turnery. A lamp-oil may be

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obtained from the kernels of the berries.

The *Suecica*, is the other indigenous species, found in the north of England.

Of the rest we can only mention the *Mascula*, a native of Europe, with a stem rising twenty feet high; bearing a red, cherry-like, esculent fruit, of a hot acrid taste, whence it is called cornelian cherry; the *Japonica*; the *Alternifolia*, a North American plant; and the *Canadensis*.

Several of the species of this plant are extremely beautiful and elegant; especially the *suecica*, and the *canadensis*; the last flowers in August, and is propagated by its creeping roots; it requires a shady situation and light soil, composed chiefly of bog-earth.

CORNS, are hardened and elevated portions of the cuticle or scarf skin, of the human body, occurring on the toes chiefly, but sometimes also on the hands. They are commonly produced on the feet, by the pressure of tight shoes or boots. Perhaps the most effectual remedy for most corns is, to let them be dissected out by a careful and experienced operator, which they may very easily be, without much pain or inconvenience, provided they are not connected with the periosteum, as they sometimes are. If, however, this be not submitted to, after cutting the corn as closely as possible, without injuring the true skin, or producing any pain, a leaf of green house-leek may be worn on the part and renewed daily for some time; a leaf of green ivy has also been found sometimes of service, being also renewed daily. But the best remedy for corns is, beyond a doubt, soft and easy shoes and boots. It is of importance too, in order to prevent corns, or to cure them, that the same shoe or boot be always worn upon the same foot. If persons troubled with corns, pay attention to the *shape*, *softness*, and *easiness* of their boots and shoes, and not sacrifice their comforts at the shrine of fashion, they will not long be annoyed with those painful, and always unpleasant visitants: and, without such

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precautions, the attempts to cure corns will be in vain.

Our readers cannot be too much upon their guard to avoid the impositions of advertising and itinerant quacks, who offer their salves, and other compositions, for the cure of corns : scarcely one of which is of any use whatever.

CORNS OF HORSES, frequently cause lameness. They generally occur on the inner heel, or between the bar and the crust. In the cure of corns in their recent state, the general method is to pare out the red part, or what is termed the corn, and so contrive the shoe, that it may not bear on the tender part. In slight cases, this often affords temporary relief : but the only effectual mode of taking off the pressure from the heel is, by means of a bar-shoe, and this can be only applied when the frog is sufficiently prominent and firm to receive its pressure : and should not the frog be of this structure, the only thing to be done is to pare away the crust of the tender heel, so that the heel of a common shoe may not rest upon it : when a horse becomes very lame from a corn, the shoe should be left off for a short time, and a large bran poultice must be applied.

COROL, or **COROLLA**, in botany, the second of the seven parts of fructification, or the inner covering of the flower.

CORPULENCY, or **OBESITY**, a kind of disease, consisting in the accumulation of a great quantity of fat in the cellular membrane, which distends various parts of the human and other animal bodies, to an unnatural size.

This complaint, for complaint it assuredly is, and often, too, a very troublesome one, is first observed in very young children, before they are weaned ; as soon as they are removed from the breast and can take muscular exercise, it generally goes off without leaving any inconveniences behind it. But the corpulency of adults, if once accumulated, is not so easily subdued, nor are the effects of it so easily obviated. It is now well known, that idleness and sloth, are

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both chief causes of corpulence : lying long in bed, eating much animal food, particularly of the fatter kinds ; drinking mucilaginous and strong malt-liquors ; lolling in a warm and close carriage ; impure air ; warm and close and confined rooms, almost of any kind, are, more or less, conducive to this complaint, nor is a vacuity, or want of employment of the mind, a trifling cause in the production of this malady. These being the principal causes, the cure, or at least the prevention of corpulence, is sufficiently obvious : **LABOUR**, or if this be a disagreeable term, powerful exercise ; walking to fatigue ; riding on horseback ; spare diet ; the quantity of vegetable over the animal food which is taken, ought to be greatly predominant ; for a common drink, cider, or water, but no malt-liquor ; early rising ; active mental pursuits, with little sedentary employment of any kind ; all the vegetable acids may be occasionally taken with advantage ; nor is it of trifling consideration to sleep in a large, open, and cool bed-room, with an open chimney, and a light weight of bed-clothes. All crowded assemblies should also be avoided.

Corpulence appears to be a punishment attached to those classes of society who do not use a sufficient quantity of labour to keep them in health. A fat day-labourer, or a fat poor man, would be a phenomenon. Surely this is deserving of serious consideration !!

CORROBORANTS, medicines, food, or whatever gives strength to the body : such as bark, wine, beef, the cold-bath, &c.

CORROSIVE SUBLIMATE, *Hydrargyri Oxymurias*, or oxymuriate of mercury, is a powerful and highly poisonous compound, consisting of quicksilver and the muriatic acid. It is said, however, that its most correct name is *bichloride of mercury*. The London College directs its preparation as follows : Take of purified mercury by weight two pounds ; of sulphuric acid by weight thirty ounces ; of dried muriate of soda four pounds. Boil the

CORROSIVE SUBLIMATE

mercury with the sulphuric acid in a glass vessel until the sulphate of mercury is left dry. Rub this when it is cold, with the muriate of soda, in an earthenware mortar; then sublime it in a glass cucurbit, increasing the heat gradually.

Corrosive sublimate is usually seen in the form of a perfectly white semi-transparent mass, exhibiting the appearance of imperfect crystallization. It is sometimes procured in quadrangular prisms. Its specific gravity is 5.2. Its taste is acrid and nauseous, leaving a peculiar metallic and astringent flavour upon the tongue. It dissolves in 20 parts of water at 60., and in about half its weight at 212. It is more soluble in alcohol than in water. When heated, it readily sublimes in the form of a dense white vapour, strongly affecting the nose and mouth. It dissolves without decomposition, in the muriatic, nitric, and sulphuric acids. The alkalis and several of the metals decompose it. Calomel, as well as corrosive sublimate, are decomposed by potash, soda, and lime: the former affords *black*, the latter red oxide of mercury; and the chlorides of potassium, sodium, and calcium, are produced.

This salt has been long known. It is a powerful stimulant and alterative: but in large doses, is one of the most violent of the metallic poisons. It is given with advantage in old ulcers, chronic rheumatism; and in cutaneous diseases, particularly lepra. Its sensible operation is by urine; but sometimes it occasions the most violent nausea, and griping and purging, in which cases it should be combined with opium; and it is always necessary to take during its use, some mucilaginous fluid, to moderate the irritation which it is apt to produce. It is also sometimes used as an external application in lotions to stimulate indolent ulcers, &c. but here also great caution is required in its application.

The dose of this dangerous medicine, when taken internally, is from *one eighth to one fourth of a grain* twice a day,

made into a pill with crumb of bread, or extract of poppies.

Corrosive sublimate is also used by farriers, in farcy, and obstinate complaints of the skin in horses, with good effect, but here also, it should be given with caution. The dose is a grain or more. Externally it has been found useful when dissolved in an equal weight of muriatic acid and water, in itching complaints of the skin, and obstinate grease. It is also the best caustic for quittor. It is also sometimes used to increase the activity of blisters for horses.

When corrosive sublimate has been given by mistake, or taken by design, in doses sufficient to be injurious, the following method of counteracting its poisonous effects must be adopted.

We think it necessary, however, to premise, that when either *corrosive sublimate, or other mercurial preparations, arsenical preparations, verdigris, or other salts of copper, butter of antimony, or other antimonial preparations, salts of tin, bismuth, gold, or silver*, have been taken in doses sufficient to become poisonous, and VERY SMALL doses of most of the articles here mentioned are poisons, their general effects are nearly the same; their taste is acrid, metallic, more or less, like that of ink, but less burning than acids and alkalis.

The patient complains, in general, of a constriction of the throat, pain in the back part of the mouth, stomach, and intestines; there is a desire to vomit, and vomiting follows with more or less violence. The matter vomited is of various colours, often mixed with blood; it does not effervesce when thrown up on the ground, or mixed with chalk; it never changes the colour of violets green; and when it reddens the tincture of litmus, or red-cabbage, it is in a very slight degree. The bowels are occasionally constipated, sometimes relaxed, and then the evacuations are often bloody. To these alarming symptoms are joined frequent and foetid eructations; sickness, difficulty of respiration; and almost suffocation; the pulse becomes small, hard, and accelerated.

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rated ; and in certain cases, it may be said to vibrate under the finger like catgut. It is seldom unequal and intermittent. An inextinguishable thirst, difficulty of making water, cramps, the extremities of an icy coldness, horrible convulsions, general loss of strength, the features of the face changed, and delirium : such are the symptoms which announce approaching death, unless energetic measures for relief are speedily put in practice. In some circumstances the intellectual faculties are preserved unchanged till the last moment.

Corrosive sublimate in doses of even one grain, rarely fails of producing unpleasant symptoms. Placed upon cancers, wounds, tumours, &c. with the design of effecting a cure, it has often acted as a violent poison, and, in many instances, caused death. Mercurial ointment, frequently rubbed upon the head, and other parts of the body to destroy vermin, is not without danger ; when used in great quantity, or the rubbing too long continued, especially if the skin be delicate, many of the symptoms of poisoning are produced. The other preparations of mercury which are more or less poisonous are, the red oxide, ethiop's mineral, cinnabar, or vermilion, turbeth mineral, and nitrate of mercury.

It has been incontestably proved that the **WHITE OF EGGS**, beaten up with cold water, is the best counter-poison to corrosive sublimate and the other mercurial preparations. If this be not at hand, *milk* may be used with great success. The alkalies, alkaline earth, preparations of sulphur, bark, and charcoal, are improper, and not to be used.

The whites of twelve or fifteen eggs should be beat up and mixed with two pints of cold water, and a glass full taken every two or three minutes, so as to favour vomiting. If the number indicated be not at hand, as many as are, should be used in the mean time, while others are sought after ; the yolk may also be used without inconvenience. In defect of eggs altogether, milk, gum-water, decoction of linseed, mallows, sugar and water, or simple water, should

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be taken in abundance. If after taking the number of eggs prescribed, the symptoms be not removed, the same should be repeated ; these should be prepared before hand, so that you may act with the greater promptitude. The patient is then to be treated in the same manner as directed in the *after-treatment*, under **AQUAFORTIS**, which see ; except that vomiting should be excited by irritating the throat with the finger, or a feather.

CORTEX, the Latin term for bark ; but in a medical and emphatic sense, the *cortex* means the **PERUVIAN BARK**, which see.

COSMETIC, any medicine or preparation which renders the skin soft and white, or contributes to beautify the complexion. The various articles continually advertised as beautifiers of the skin, are for the most part useless ; or, if they have any effect, it is by having mercury in their composition, against which our fair readers cannot be too much on their guard.

An infusion of horse-radish and milk is said, however, to be a useful cosmetic ; and the expressed juice of house-leek, mixed with an equal quantity of milk, or cream, has been recommended for clearing the skin of pimples, and recent eruptions. Frequent ablutions with soap and water is, perhaps, the best application, particularly if temperance, and moderate exercise, be also adopted. See **COMPLEXION**.

COSTIVENESS, or **CONSTIPATION**, a state of the body too well known to need description. It is sometimes occasioned by debility in dyspeptic persons ; it may proceed also from drinking red wines, or other astringent liquors ; or from the use of insipid food, not sufficiently stimulating the intestines ; a long continuance in a sitting posture frequently produces costiveness ; sometimes it is owing to the bile not descending to the intestines as in the jaundice ; and sometimes it proceeds from diseases of the intestines themselves, as palsy, spasm, tumours, &c. ; it is also thought to be occasionally hereditary.

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Costiveness is always more or less injurious, according to the state of the body and the length of its continuance. It is peculiarly hurtful to most persons labouring under dyspeptic complaints: the hypochondriac and hysterical in particular. It is increased by keeping the body too warm, and by lying long in a recumbent posture, either in bed or during the day. Intense thought and a sedentary life likewise contribute to this disease; the first, perhaps, by abstracting the attention from the solicitations of nature. Hence, exercise in the open air, and various motions of the muscles, and, indeed, of the whole body, are exceedingly advantageous. No person continually costive can expect good health; if, therefore, the occupation be such, that with diet of an opening kind, such as ripe fruit, roasted apples, stewed prunes, raisins, gruels, and the coarser kinds of bread, the body cannot be kept free from costiveness, recourse may be had to medicine, and for this purpose *aloetic purges* are by far the best. Either the *compound extract of colocynth*, or the *compound colocynth pills*, are to be preferred, taken occasionally going to bed, by sufficient doses to produce one, or at most two, evacuations. We have elsewhere in our work protested against the general use of quack medicines, but we can assure our readers that the **SCOTS PILLS**, sold by DICEY and Co. in Bow Churchyard, London, are some of the best laxative pills for costive habits which we know. They consist principally, we believe, of aloes; their operation is remarkably pleasant and agreeable. We knew an eminent physician to one of our infirmaries who, from his sedentary habits, took one of these pills every night for a series of years. But, however, although we recommend these medicines, it is better, if possible, to obtain a regular and daily evacuation of the bowels by more natural means. Whether these means may be within the reach of the reader must depend upon his own peculiar situation; but of this he may be assured, that if he happens to be a citizen, and can exchange

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the town for the country, give up his sedentary occupation, and betake himself to active employments, the alvine evacuations will soon experience a beneficial change, and with this change an improvement of the general health follows as a necessary consequence.

In obstinate and long-continued costiveness, the introduction of a bougie, thirteen inches long and of a proportionate strength, has frequently succeeded in relieving the complaint.

Dr. WILLAN mentions a lady who was thus relieved, who had been twenty-six days without any evacuation; another patient went twenty-nine days, and another thirty-three; the last cure, notwithstanding its duration, terminated favourably.

Although costiveness of long continuance is frequently obviated, yet the reader should not forget that a regular evacuation once every day is always desirable, and should, if possible, be obtained.

COSTIVENESS OF HORSES arises, for the most part, from want of exercise, when a horse is kept upon hard dry food, as oats or beans; but in some horses it appears to be habitual. It is often the cause of colic, and sometimes of inflammation of the bowels; whenever it is observed, therefore, a dose of laxative medicine should be given, and opening clysters thrown up to remove any hard excrement which may be lodged in the rectum. To prevent a return of the complaint, regular exercise and a change to green food are necessary; if this cannot be procured, bran mash should be substituted. To a horse naturally disposed to costiveness a bran mash should be given twice or thrice a week, and now and then a little green food.

Cattle also are liable to a dangerous kind of costiveness, termed *fardel-bound*, in which there is sometimes an appearance of slight purging, by which a person may be deceived. A laxative, or purging drench, should be given without loss of time. See **LAXATIVES** and **PURGATIVES**.

COTT, a kind of frame suspended

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from the beams of a ship for the officers to sleep in : it is made of canvas, sewed in the form of a chest, about six feet long, one foot deep, and two or three wide, and is extended by a square wooden frame with a canvas bottom, on which the bed or mattress is laid. It is a much more convenient and wholesome mode of sleeping than either the hammock or small confined cabins.

COTT is also the name of a similar convenience suspended on frame work, and used instead of a cradle, to which it is superior, for lulling children to sleep. But both cotts and cradles should only be used when absolutely necessary. To keep children for hours in a stupid dose by the motion of either of these vehicles, as is the practice of some nurses, is highly improper, and should be discountenanced by every parent. See CRADLE.

COTTAGE, or Cot, a mean habitation ; or at least a house which has the appearance of ineanness ; but such is the all-powerful effect of fashion, that many of the opulent choose to call their residences cottages, although they have nothing, in common with a cottage, but thatch, perhaps, on the roof, and an affectation of the simple style of the poor man's house in its shape and structure.

Cottage, in law, is a little house without lands belonging to it. By 31 Eliz. c. 7, no man may build a cottage unless he lays four acres of land to it, except in cities, or market-towns, or within a mile of the sea, or for the habitation of mifer-, sailors, foresters, shepherds, &c. ; excepting also cottages erected by justices of the peace for poor impotent persons. The above four acres of land must be freehold, and land of inheritance ; copy-hold, or lease for years are not sufficient tenure by the statute. Whatever good was intended by this statute, we believe it is now considered as a mere dead letter.

In consequence of the diminution of the number of farms, and, of course, an increase in their size, in this country, it has been strongly recommended to provide numerous cottages with a few acres

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of land attached to them, in order to counteract the overwhelming evils resulting from the burthen of the present poor. We do not believe that the *cottage system*, as it is called, will completely remedy the evils complained of ; but, we think, that under wise superintendence much good in the erection of cottages, and appropriation of land, might be done. Those who have opposed the cottage system have looked at it merely as one of profit, but in our estimation social *happiness* is of more importance : and that cottages, with a few acres of land attached to them, must be productive of comparative happiness to many of the poor now in distress, we cannot permit ourselves to doubt. Whether the plans for the support of the poor lately proposed by Mr. OWEN might not combine both happiness and profit, if profit be desired, in a much better way, is a question which can only be decided by an experiment, which, how much soever we might wish to see, is not, at present, very likely to be made. See POOR.

For the best method of building cottages, see BUILDING IN PISE.

COTTON, or *Gossipium*, a genus of plants consisting of ten species, a few natives of America, but the far greater number are of Asiatic growth. Most of these afford a wool which envelopes the seeds, contained in three or four-celled capsules, and which may be usefully applied to mechanical or domestic purposes, or woven into cloths.

The cotton shrubs of the American islands grow without any cultivation ; but their wool is coarse and short, and hence cannot easily be spun ; it might answer the purpose of felts in the manufacture of hats ; but it is generally used by the inhabitants themselves for stuffing pillows and mattresses.

Most of the West Indian species are annual ; but the *Arboreum* of India is a perennial tree, rising in a straight line about eight feet high.

The cotton chiefly selected for propagation is the *Herbaceum*, a native of the East Indies. The pods are not unfrequently as large as middling-sized

apples. This plant thrives best, in respect of wood, in new ground; but best, in respect of fruit, in dry stony ground that has been already tilled; and hence such soil is generally preferred by our planters. The seeds are sown in March and April, and during the spring rains. Holes for the seeds are made in distinct rows, at a distance of seven or eight feet from each other. When they have shot forth to the height of five or six inches, all the stems are pulled up, excepting two or three of the strongest. These are cropped twice before the end of August; nor do they bear fruit till the second pruning. By such repeated croppings the plant, though naturally an annual, may be prolonged, and made to bear a sufficiency of fruit for three years. When the cotton is gathered, the seeds are separated from the wool by a mill of a very simple contrivance, and perfectly adequate to the purpose.

This plant, although a native of the torrid zone, is yet produced in Turkey, as far as 45 degrees north latitude.

The generality of native cotton is white, but some is of a nankin colour, and is invaluable in the manufacture of that article, as it fades very little, even with long use and frequent washing. Its elasticity is inconceivable; it may be pressed into a fiftieth part of the space to which the strongest packers can reduce it by personal exertion.

The uses of cotton are various and great. The patents too which have been obtained for spinning cotton-yarn and weaving cotton-cloths are almost innumerable. To such perfection is the manufacture of cotton brought in this country, that little more seems possible to be achieved.

COTTON-MILLS for spinning this material are in constant activity in various parts of Great Britain. Perhaps the most extensive cotton-mills, certainly of the most celebrity, are those of Mr. ROBERT OWEN, at NEW LANARK, in Scotland. It is to be lamented that the cupidity of persons engaged in cotton-spinning should prompt them not only to employ very young children in

these mills, but also to employ them too many hours in a day in a heated and unwholesome atmosphere, to the great injury of their health. To the benevolent credit of Mr. OWEN, however, he has not only abridged the hours of the labour of the children, but he has also, in a population of above two thousand persons, introduced such an excellent system of recreation, instruction, and moral discipline, as has astonished every person who has had an opportunity of beholding it. Mr. OWEN's lever of moral action is KINDNESS. We may possibly have occasion, in the course of our work, to advert to this subject again. See COTTAGE, EDUCATION, POOR, and PUNISHMENT.

COTTON-GRASS, or *Eriophorum*, a genus of plants containing six species, four of which are common to the bogs of our own country. The down of the *polystachion*, or broad-leaved cotton-grass, has been mixed with wool and cotton, and spun into thread, of which gloves, stockings, and even cloth have been made.

Cotton-tree Silk. See SILK COTTON-TREE.

Cough. See WHEAT.

COUGH, a sonorous concussion of the thorax, produced by the sudden expulsion of the inspired air.

Coughs are produced by any acrid, or sometimes even merely a cold substance, applied to the passages through which the air enters. These are lined with a membrane so exceedingly sensible, that it cannot bear the mildest stimulus without throwing the muscles serving for respiration into a violent convulsion: hence, the air is expelled with a force sufficient to carry along with it the irritating substance, and thus a cough becomes, in such instances, not only useful, but indispensably necessary for the preservation of life; as this effort frees the lungs from the stimulating matter, or foulness, which might otherwise be attended with suffocation. A cough is, therefore, an almost inseparable companion of every inflammation of the lungs, as well as every difficulty of breathing; nay, it

frequently takes place when the purest air enters an excoriated sore, or too sensible a wind-pipe, and its tender branches. It also arises from a variety of other causes: from worms and impurities of the first passages; obstructions of the abdominal viscera, particularly the liver; from a recent catarrh, occasioning irritation at the entrance of the trachea, &c.; and from some other causes not always apparent.

For the coughs arising from **ASTHMA**, **BASTARD PERIPNEUMONY**, **CATARRH**, **HOOPING COUGH**, **INFLAMMATION OF THE LUNGS**, **PLEURISY**, and **PULMONARY CONSUMPTION**, see the respective articles.

It sometimes happens that coughs are occasioned by the mere irritability of the passages, and nothing else: in this case opiates will be found useful; or a mixture of equal parts of tincture of opium and compound spirit of ammonia, taken to the quantity of twenty or thirty drops, or more, in a glass of water, two or three times a day, avoiding cold air and very hot rooms.

It ought to be remembered, however, that, in the commencement of all coughs, it is best to avoid every kind of stimulant, both medicinal and alimental: in such case it is better to take nothing than to take what may be improper. Liquorice, honey and oil, spermaceti, and a variety of other nostrums, have been recommended for coughs, but we really cannot say much in their favour.

Liquorice, by exciting a larger quantity of saliva, may, indeed, be occasionally of service; the rest are more likely to be injurious than beneficial.

A most extraordinary case of cough, cured by repeated bleedings, has lately been made public by Mr. BRANDE. But as such cures are not likely to be attempted by the domestic prescriber, there is no necessity for enlarging on this subject.

We cannot quit the subject of cough without impressing upon our readers the necessity of attending to the first access of cough. Many a votary of fashion and of beauty has lost her life owing to a neglected cold and cough.

We have elsewhere in our work insisted upon the necessity of suitable clothing for the different seasons of the year; and although coughs do frequently, it is true, pass off without any medicine, or attention whatever, yet the insidious nature of phthisis is such, that too much caution can scarcely be taken relative to all diseases in which the lungs and the respiration are concerned.

Cough, Hooping. See **HOOPING-COUGH**.

COUGH, THE CHRONIC, OF HORSES, is often a consequence of neglected cold; it is also, sometimes, caused by allowing a horse, which has an inordinate appetite, to eat too much hay and drink too much water.

For the first kind of cough, bleeding, mashes, and a powder composed of one ounce of nitre and two drachms of emetic tartar, taken twice a day until the horse stales considerably more than usual, are the best remedies.

With respect to the second kind of cough, arising from a voracious appetite, or foul feeding, no good can be expected from medicine, unless the horse's diet be properly regulated.

The medicines employed for the cure of chronic cough are very numerous, such as galbanum, assafoetida, ammoniacum, Barbadoes tar, balsam of sulphur, balsam of Peru, garlic, Castile soap, cinnabar, &c.; but much more may be done by attention to the horse's diet and exercise than by any medicine whatever. Horses with chronic coughs should have their bowels kept rather open than otherwise, with bran mashes, or small doses of laxative medicines.

COUNSEL, or ADVICE, particularly in undertakings of great moment, is of the utmost importance, as it often happens that the whole future life depends upon the steps which are taken in consequence of counsel. The greatest trust between man and man is the trust of giving counsel. Whenever you apply for advice to any one, two things are requisite in order to its being good and effectual, and these are the *ability* and the *will* to give it. It too

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often happens in our daily intercourse with mankind, that advice and opinions are given and advanced with an unguarded flippancy wholly unsuitable; and that many persons suppose they give advice when it is nothing more than a manifestation of their own self-conceit, and often neither suited to the wants nor the particular situation of the individual to whom it is addressed. In all momentous undertakings, such as marriage, the purchase of estates, the entering upon a new scene of life, &c. by all means, take counsel; but be also, at the same time, thoroughly assured, that your friend or your counsellor is both able and willing to give it.

Counsellor. See **BARRISTER**.

COURAGE is often defined as synonymous with bravery; but bravery, when not supported by wisdom and virtue, is a lawless quality. True courage consists in a firmness and resoluteness of mind, arising from a process of sound reasoning which, amidst all the dangers and evils incident to this state of being, prompts a person steadily, and at all times, to pursue those objects which are virtuous, just, and good. A warrior may be brave, but he is often not courageous: many a warrior has faced death in a thousand shapes in a field of battle, and yet has sunk before the approach of death on a bed of sickness. We fear, indeed, that the trade of war is, at all times, a bad school for real courage. Philosophy and virtue are much better ones.

COURSING, the pursuit of game by greyhounds. Were it not of too serious a nature, it would be extremely amusing to contemplate the various laws which have been made amongst sportsmen, with the sanction of royal authority, in former times, for the regulation of coursing. Notwithstanding, we must admit coursing to be the least objectionable mode of hunting, yet, surely, rational beings may find something more desirable for their *amusement* and their *sport* than the pursuit and dying agonies of a hare.

Court-plaster. See **PLASTER**.

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COURTESY, OF ENGLAND. A law or tenure by which, if a man marry an heiress, without any settlement at marriage disposing of her property otherwise, and she should bring a child begotten by him, alive into the world, yet if both the child and wife die immediately, he is entitled to the possession of the land during his life.

COW, the female of the genus of animals *bos*, or *ox*. Relative to the *breeding* of cows, we must refer the reader to the articles **BREEDING OF CATTLE** and **BULL**. We shall consider the cow here, principally, as an article for the dairy farmer.

Whatever the cows may be, whether the large short-horned, or Holderness breed, or the long-horned, Suffolk, polled, and Alderney breeds, or other breeds of the smaller kinds, the milk-farmer should constantly choose such as are wide in the horns, thin in the head and neck, dewlap not too pendulous, the carcass deep and flattish, wide, and rather pointed, hips, buttocks round and fleshy, legs thin, with short joints, the *udder capacious*, not fleshy, but extending well backwards, the milk veins large and prominent, and the teats long and large. A general appearance of spareness, not to say of poorness of the body, is a mark, amongst other indications, of a cow which gives plenty of milk; whereas, a disposition to plumpness and fatness in the limbs, and whole body, is an indication of a cow which gives little milk.

A tame and gentle disposition is also a circumstance of importance. The beauty of form is of secondary consideration when the quantity of milk is the first. Cows mostly come into milk about the third year of their age, and are in full milk at the fifth; they may be continued to the eighth or tenth, or according to circumstances. It is best, however, not to keep them too long, as the vigour of the secretion is much less in old than in young animals; and, besides, they are more liable to swellings of the udder as well as other diseases.

The length of time which cows go

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with calf is nine months. It is the practice with some to keep an account of the periods of their taking the bull, and where the stock is extensive this is of much advantage.

Where cows are *well fed*, they may continue to be milked till within a week or two of their calving, without suffering any injury whatever; but, under other circumstances, it may be better to let them run dry for a month, six weeks, or even more. And where only one or two cows are kept, it is useful to know that, by good feeding, they may be milked, without any bad consequences, till nearly the time of calving.

From twenty to twenty-five or thirty cows, are sufficient for one bull. After three or four months cows may be ascertained to be in calf by pressing upon the flank with the hand, as, when that is the case, the calf will be found to strike against it. They are shown to be near calving by the springing at the udder and the bearing. Heifers, or young cows, are said to spring the soonest at the bearing, and the older kinds at the udder. See **CALF**.

It is scarcely necessary to add, that in order to enable cows to secrete the greatest quantity of milk, they should be fed with the best and most succulent food. See **SOILING**.

It has been recommended by some persons, to milk cows *three* times a day instead of twice; but we have not heard that this plan has ever been practised with any advantage. See **BUTTER**, **CHEESE**, **CREAM**, **MILK**, &c.

The diseases of cows are treated of under their respective heads, see **BLOWN**, **RED-WATER**, **COW-POX**, &c. One of the best liniments to disperse swellings in the udders of cows is the following: take of olive-oil four ounces; liquor of ammonia four ounces; oil of origanum one drachm. Mix them: and let the swelling of the udder be well rubbed with it three times a day. Hog's-lard may be used instead of the olive-oil, with, perhaps, equal advantage, taking care to mix it well with the other ingredients.

COW-GRASS, or *Trifolium medi-*

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um, usually known to the farmer under the name of marl-grass, is said to be a more lasting plant than the common red clover. On clayey soils, and loamy ones of the stronger kind, it succeeds well; even on sandy soils it produces good crops. On the heavier soils it may be sown advantageously with other grasses, where the land is to remain in grass.

COW-ITCH, **COWHAGE**, or *Dolichos*, a genus of plants consisting of fifty-three species, natives of the East or West Indies, or the Cape. The following are the chief:

The *Lablab*, a beautiful climbing shrub, and largely cultivated in the gardens of Egypt, for the purpose of making bowers and arbours, on account of the excellent shade afforded by its leaves.

The *Soja*, or *Soy Cow-itch*; called by the Japanese *daidzu*, or the pod-flower, by way of eminence, on account of its beauty; it is also highly valued by them for its culinary purposes; a kind of butter called *miso*, and a pickle called *sooja*, being obtained from the seeds, and is known among ourselves by the name of **SOY**.

The *Pruriens*, or common Cow-itch, is a climbing perennial plant, a native of America and the East and West Indies. The leaves are smooth on the upper surface and hairy beneath; the flowers are very beautiful. The fruit is a coriaceous pod, about four or five inches long, curved like the Italian letter *s*, thickly covered with bristly brown hairs, and containing three or five oval compressed seeds. The pods which are found in the shops are brought from the West Indies. If incautiously touched, the fine hairy matter with which they are covered easily rubs off, and sticking in the fingers, or floated by the air on the skin, occasions a troublesome and intolerable itching.

The fine hairs of this plant are found useful in expelling the long round worms which infest the human intestines. The best mode of preparing the hairs as a remedy, is to dip the pods in syrup, or melasses, and then, with a

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knife, to scrape off the hairs along with the syrup. When the mixture attains the thickness of honey it is sufficiently impregnated with the hairs and fit for use. The dose of this mixture, for a child of three or four years old, is a tea-spoonful given in the morning for three days, and then to be followed by a brisk cathartic. The hairs of a single pod are a dose for an adult. See WORMS.

Cow Parsley. See CHERVIL.

COW-PARSNIP, or *Heracleum*, a genus of plants containing ten species, all natives of Europe, except the *Haberosum*, a native of Chili. One, the *spondilium*, is found in our own thickets. There is a variety with long narrow leaflets; both were often called formerly *brank ursine*. It is a biennial plant, and perfectly harmless, but it is of no importance.

COW-POX, *Vaccina*, or *Variolæ vaccinæ*, a disease long known in the dairy counties, affecting the udder of the cow, and in the year 1798 recommended to the world by Dr. JENNER, as a preventive of the small-pox.

The *genuine* cow-pox originates from the matter produced in the disease called the grease, affecting the horse's heel; whenever any person has been handling such sores in the horse, and afterwards, without freeing the hands from the infectious matter, milks the cow, the teats become affected with the cow-pox. And, however it may mortify human pride, such is the origin of the vaccine fluid, which is fraught with such unspeakable benefits to mankind.

The *genuine* cow-pox appears on the teats of the cow in the form of vesicles, of a blue colour, approaching to livid. These vesicles are elevated at the margin and depressed at the centre. They are surrounded with inflammation. The fluid which they contain is limpid. The animals are indisposed, and the secretion of milk is lessened. Solutions of the sulphates of zinc and copper are speedy remedies for these pustules; otherwise they degenerate into ulcers, which are extremely troublesome; much of the obstinacy, however,

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of these sores originates from the friction in consequence of milking.

Similar effects are produced in the hand of the milkers, attended with febrile symptoms, and sometimes swelling in the arm-pit. Other parts, where the cuticle is rubbed off, or which are naturally destitute of that defence, are also liable to the same affection, provided active matter be applied. In some instances, pustules have been produced when the cow-pox matter has been applied to the sound cuticle.

The *spurious* cow-pox is white; and both in the human subject and in the brute animal, when infected with the casual cow-pox, the sores occasioned by the genuine species are more difficult to heal than those which are occasioned by the spurious kind. It is of the utmost importance to distinguish the genuine from the spurious sort, since a want of such discrimination would cause an idea of security against the small-pox which might prove delusive.

The cow-pox, when properly introduced into the human system by *inoculation*, appears to possess almost as great a superiority, in mildness and security, over the small-pox *inoculation*, as this has over the natural small-pox; so that the same precautions which are highly requisite in communicating the latter, where the time can be chosen, become less so where the disorder is to be introduced by inoculation, and still less where the vaccine is substituted for the variolous disease. The inoculation of cow-pox may, in general, be practised with great safety at any age, even from the earliest infancy; notwithstanding which, it is certainly not advisable, during the period of teething, nor in any other particularly unfavourable state of the body; but it is universally admitted, that it is preferable at *any time* to the running of any considerable risk of the small-pox contagion.

The *inoculation of the cow-pox* is one of the most simple of operations, and may be performed by every intelligent person in the empire, with only a very moderate share of study, practice, and attention. It may be done either by

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a lancet or by a common glover's needle: the last is certainly preferable for those who cannot handle the lancet with dexterity. The method of making the incision for the insertion of the vaccine matter, is not however a point of indifference. Whether a lancet or needle be used, it should be held nearly at a right angle with the skin, in order that the infectious fluid may gravitate to the point of the instrument; which in this direction should be made to scratch the cuticle repeatedly until it reach the true skin, and become tinged with blood. If a needle be used, a good, if not a better, way is to lift up the scarf skin with the point first, so as to be convinced, by the appearance of a trifling stain of blood, that the true skin is touched; then to dip the point of the needle in the infectious matter, and insert it into the previously made opening. But in either of these ways, care must be taken not to produce bleeding, which will most probably spoil the operation; or, at any rate, produce consequences most desirable to be avoided.

The part generally chosen for inoculation is the front of the left arm, about midway between the shoulder and the elbow, and upon the whole is the most convenient place.

The most certain method of imparting the infection, is to inoculate whilst the matter is fluid and fresh from the pustule; but as this is often impracticable, it is advisable to hold the infected lancet or needle over the steam of boiling water, to soften and dissolve the hardened matter. When the matter has been procured upon thread, which we do not advise, a small longitudinal incision must be made upon the arm, to which the infected thread must be applied, and detained there by adhesive plaster till the disease is communicated. If, however, the inoculation cannot be made at once from the pustule of another patient, the matter may be either taken upon the point of a lancet, a needle, a clean quill cut in the shape of a pen without a slit, or on a piece of glass about an inch square, having another of exactly the same size to put

over it. This last, or the quill, is we think the best method: the matter should be suffered to dry before it is wrapped up for carriage. Dried matter will, however, seldom long preserve its efficacy, except it be taken and kept with particular precautions: heat is very detrimental to it.

The progress of the vaccine inoculation, from the time of the insertion of the matter to the drying up of the pustule, is in general very uniform. The first indication of the success of the operation, is a small inflamed spot at the part where the puncture was made, which is very distinguishable about the third day. This continues to increase in size, becomes hard, and a small circular tumour is formed, rising a little above the level of the skin. About the sixth day the centre of the tumour shows a discoloured speck, owing to the formation of a small quantity of fluid, and this continues to increase, and the pustule to fill, and become distended till about the tenth day. At this time it shows in perfection the characteristic features which all along distinguish it from the small-pox pustule. Its shape is circular, or sometimes a little oval, but the margin is always well defined, and never rough and jagged; the edges rise above the level of the skin, but the centre is depressed, and it has not that plumpness which marks the small-pox pustule. As soon as the vesicle contains any fluid, it may be opened for future inoculation, and from about the third to the ninth day it is found to be in its greatest activity. It is not advisable to take it after the ninth day, although some late experiments on the continent, by Dr. FISCHER, induce us to believe that the ninth, or even the tenth day is better than an earlier period. Dr. F. asserts that he has frequently employed the scab, moistened when required for use, with the most satisfactory results.

About the eighth day, when the pustule is fully formed, its effects on the constitution begin to appear; the general indisposition is commonly preceded by pain at the pustule, and in the arm-

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pit, followed by head-ach, some shivering, loss of appetite, pain in the limbs, and a feverish increase of the pulse. These continue with more or less violence for one or two days, and always subside spontaneously without leaving any unpleasant consequences. During the general indisposition, the pustule in the arm becomes surrounded with a circular inflamed margin about an inch, or an inch and a half broad, and in some instances spreads considerably further : this blush or efflorescence, is an indication that the whole system is affected, and upon the appearance of which we may be sure that the cow-pox has impregnated the constitution with that, whatever it is, which enables it to resist the infection of small-pox : for the general indisposition, if it occur at all, always appears on or before the time when the efflorescence becomes visible. After this period, the fluid in the pustule gradually dries up, the surrounding blush becomes fainter, and in a day or two dies imperceptibly away, so that it is seldom distinguished after the thirteenth day from inoculation. The pustule now no longer increases in extent, but a hard thick scab, of a brown mahogany colour, is formed on its surface, which, if not pulled off, remains for nearly a fortnight, till it spontaneously falls, leaving the skin beneath perfectly sound and uninjured.

Such is the uniform progress of the disease in the greater number of cases, with only the variation of a day or two in the periods of the different changes. The successive alterations which take place in the appearance of the pustule on the arm, appear to be more constant and necessary than the general indisposition : for very young infants pass through the whole of the disease without any perceptible illness ; with children it is very moderate : but with adults it is sometimes very severe for a few hours, though never in any degree dangerous ; and sometimes, even in these last, altogether insensible.

In the cow-pox it rarely happens that any pustule appears on any part of the body, except where the matter is in-

serted. But a rough and unskilful method of inoculation, where the wound is made deeper than is necessary, and an insertion of the infecting matter takes place within the cellular membrane, will sometimes produce several pustules on different parts of the arm, and the local affection of the inoculated part will be more liable to severe inflammation : hence the necessity of care in performing the operation of inoculation. Sometimes, but the cases are rare, pustules will be formed without any assignable cause. These pustules do not always come to maturity, but often dry up and disappear before they contain any notable quantity of fluid. When they do advance to suppuration, they bear a perfect resemblance to the distinct pustules which are formed in the small pox, in its most favourable state.

It is a particular recommendation of this disease, that, though much attention and discrimination be necessary in selecting the matter for inoculation, and in performing this slight operation in such a manner as to insure success, and in ascertaining in some doubtful cases, whether the infection has fully taken effect, very little medical care is necessary. With children and infants it is uniformly so mild during its whole course, and attended with so little fever, as scarcely to be detected, so that it requires no medical treatment whatever. Indeed, it does not appear advisable to attempt to check the approach of fever about the eighth day, any otherwise than by preserving strictly that state of temperance, in which well-regulated children are generally kept during the earlier part of life. When, however, the symptoms of fever are manifest, and threaten to become at all severe, a brisk purgative, such as a dose of salts, generally produces very speedy relief. This is particularly useful when the patients are adults.

It sometimes, though rarely, happens that the pustule, formed by inoculation after the ninth or tenth day, becomes painful, the inflammation increases, and the arm becomes stiff. To prevent this, mercurial applications have

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been applied with great success. The part affected should be daily dressed with common mercurial ointment, or the red precipitate of mercury made into an ointment, as stated under the article **BASILICON**, or with **SIMPLE CERATE**. In two or three days after using this remedy, the sore generally puts on a better appearance, and becomes disposed to heal, after which a more simple dressing may be employed.

In many cases, however, nothing more is necessary to check the threatening inflammation, than to keep the part constantly moistened with vinegar and water, or Goulard's extract and water, till the pustule be dried up and only a hard scab left.

It is to be observed, however, that it is only very rarely, and in unusual inflammation, protracted beyond the eighth or tenth day, that any of these remedies should be employed : and we should also be aware, that as they will at any time induce a premature scabbing, they may, in all probability, if used too early, entirely extinguish the disease before it has rendered the constitution secure against the contagion of small-pox. And here also it may be opportune to observe, that if, by any accident, the vesicle during the rising of the pustule become ruptured or rubbed off, suppuration often ensues ; and in such case more attention than ordinary ought to be paid to the progress, and to all the appearance of the local affection ; both on account of the uncertainty of success in the pustule as a preventive of small-pox ; and also the greater probability of tedious ulceration. Slight punctures, however, at the edge of the pustule, in order to obtain virus for inoculation, do not do the least mischief.

If there be room for the least doubt of the sufficiency of the first inoculation, a second ought to be performed without delay. This, if unnecessary, is seldom attended with inconvenience, and never with danger. Either no effect is produced, or a slight festering, which terminates in a few days : an exception occurs, but rarely where a spurious, or perhaps even a genuine pustule takes

place, in those persons who are known to have had the cow-pox, or the small-pox already ; but this, from the benign character of the cow-pox, cannot be the least cause of alarm.

We think it very advisable that every person who inoculates with the vaccine matter, should keep a register of the persons whom he inoculates, and whether such symptoms occurred during the progress of the pustule, to maturation, as were decisive of its having had the proper effect upon the constitution. For want of this many mistakes have occurred ; and many persons have been reported to have had the small-pox after the cow-pox, when, if it could be traced, it would most probably be found, that such persons have not had the cow-pox at all : it should be borne in mind, too, that it is very possible for a regular cow-pox pustule to arise upon the arm, that good matter may be taken from it, and the disease propagated to other patients, and yet that it may be afterwards rubbed off so completely by the apparel, or other causes, as never to enter the system at all.

It only remains to make a few observations relative to this important discovery, as a preventive of the small-pox. It is now about twenty-two years, since **Dr. JENNER** excited the public attention to this subject, and, notwithstanding it has encountered every species of opposition, which either prejudice, ignorance, envy, or interest could excite, it has steadily made its way ; not only has the great body of medical men of this country, including the London College of Physicians, borne testimony to its merits, but the enlightened and intelligent in all parts of Europe, America, and the East Indies, agree uniformly in its acknowledged powers as a preventive of small-pox. An occasional solitary instance does, indeed, now and then occur of small-pox after the cow-pox ; but it appears that such instances are not more common than the occurrence of small-pox after small-pox itself ; so that the inoculated cow-pox is as great a safeguard against the small-pox, as is the inoculation, or occurrence

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of the small-pox itself. There can, therefore, be no pretence or excuse whatever for the inoculation of the latter disease; and we sincerely hope, that the prejudices of those persons, parents and others, who still advocate inoculation for the small-pox, will no longer be opposed to the complete introduction of so mild a disease as the cow-pox, and one which, if universally introduced, must, we think, banish the small-pox from the diseases of mankind.

COW-WHEAT, or *Melampyrum*, a genus of plants consisting of seven species, one a native of Carolina, the rest European plants, of which four are common to the woods or corn-fields of our own country, and yield an excellent food for cattle, though they are apt to give a bitter taste to the butter made from the milk afterwards.

COWRY, or *Cyprea*, a genus of the class worms, having one shell, containing an animal of the slug or snail kind. There are one hundred and nineteen species, found chiefly in the Atlantic and Indian seas. Of these some are possessed of spires, some obtuse and spireless; some umbilicate and perforated, and some margined. The following are the chief:—The *Testudinaria*, with the largest shell afforded by the genus: found in the Persian gulf and Indian ocean. The *Moneta*, found in the Mediterranean, Atlantic, Ethiopic, and Indian seas: fished up by the negro-women, three days before or after full-moon, and transported into Bengal, Siam, and America. It is the species used by the native blacks, in their commercial concerns, instead of money. The *Padiulus*, or Nuu. Shell with transverse numerous furrows, some of them forked. There is another variety of a much larger size. Both are found on most sea-coasts.

Cowries are of little intrinsic value, except for the production of lime, but as curiosities, they sometimes yield a large price. As currency, from their hardness, and comparative indestructibility, they are also of some use with those nations who have not adopted the use of the precious metals, or the mo-

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dern refinement of paper, as medium⁶ of exchange.

COWSLIP, or *Primula veris*, a well-known flower common to our meadows. See **PRIMROSE**.

CRAB, or *Cancer*, a genus of shell-fish, consisting of two hundred and four species. They have generally eight legs (rarely six, more rarely none), besides five chelate hands or claws, furnished with a moveable thumb; tentacles, six, unequal, eyes two, distant, elongated, and moveable. They mostly inhabit waters, and feed on insects, worms, dead fishes, and carcasses. They cast off every year their old shell, which is performed with much difficulty and pain. These animals have also a surprising power of reproducing, not their shells alone, but even their limbs, when lost by accident. Some of this genus are without the power of producing shells, and such generally content themselves with creeping into the univalve cast-off shells of other species of sea-insects, or sea-worms. The following are the chief:

The *Grapsus*, or Red mottled Crab. Inhabits the rocks of the American Islands. Flesh excellent.

The *Cursor*, inhabits the Mediterranean and Indian seas: a variety of this has the letter H impressed on the shell.

The *Ruricola*, or Land Crab, inhabits South America, in mountainous woods near the sea. Lives chiefly on land, and migrates in vast numbers to the sea, to wash off its spawn. It varies in its colour, but is generally of a blackish violet; from four to six inches wide; walks side-ways like the sea-crab; the flesh is good.

The *Vocans*, or Screech-crab, inhabits Jamaica, and when caught utters a cry. The large arm is so large and heavy, as to compel the animal to support it on its back.

The *Latro*, or Felon-crab, inhabits India. The flesh is good when deprived of its entrails.

The *Pagurus*, or Black-clawed Crab, inhabits the rocky coasts of Europe and India, grows to a very large size, and is most in repute for its food.

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The *Gammarus*, or common Lobster, inhabits most rocky shores, and is the species most in repute for its delicious food. It begins to breed in the spring, and continues breeding through part of the summer. It deposits its eggs in the sand, which, at a single deposit, may be calculated at the enormous amount of twenty thousand; in this situation they are soon hatched; those, however, which are cast before the warm season, seldom arrive at maturity. The young, at first, have some resemblance to tadpoles, but progressively assume the form of the complete animal.

The *Astacus*, or Craw-fish, inhabits rivers; the flesh is excellent.

The *Homarus*, or embroidered Cancer, is a beautiful insect.

The *Crangon*, or Shrimp, inhabits sandy shores, and affords a rich delicious food.

The *Squilla*, or Prawn, inhabits the European ocean, and the Baltic. There is a variety which turns white when boiled.

The *Stagnalis*, is an elegant insect of a pale blueish-green, about an inch and a half in length, found generally in small shallow pools of stagnant water.

The *Pulex*, or Flea-crab, much smaller than the last, of a livid brown colour; very common in fountains and rivulets, swimming with a vertiginous motion; troublesome to fishes, by getting between their gills.

The *Atomos*, or Atom-crab, inhabits Europe, in running water; the smallest of the genus, seldom visible without a microscope.

The *Muenas*, or common Crab, inhabits Europe and Asia; colour dirty green, becoming red when boiled.

Crab's eyes, and crab's claws, were formerly used in medicine, they are now superseded by oyster-shells. See OYSTER-SHELLS.

The actual importance of shrimps, lobsters, and crabs, as food, may be known by reference to the article ALIMENT. Whenever they are eaten, care should be taken that they are perfectly fresh: for if they contain any putrescence, the consequences may be very

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detrimental. There can be no doubt that the contents of the bellies both of lobsters and crabs, are less wholesome than the white and solid meat found in the claws. For the mode of treatment, when unwholesome crabs, lobsters, or other fishes have been eaten, see POISONS.

CRAB-TREE, or *Pyrus malus*, an apple-tree, found wild in our hedges, and in this state, like the wild pear, is armed with thorns. It appears to be indigenous, and is frequently found growing in woods and hedges. It has a very sour fruit.

The juice of the fruit of the crab is commonly termed verjuice. See VERJUICE.

The wood of the crab-tree is tolerably hard, turns clean on the lathe, and when made into cogs for wheels, acquires a polish which renders it very durable.

Crab-trees have been recommended as the best for grafting apples upon, but this we think admits of very great doubt. The seed of apples we know, when sown, produces, generally, a wilding, very different from the parent apple, but we also know, that many wildings are not crabs, in the common acceptance of the term. See APPLE-TREE.

CRACKS in the HEELS OF HORSES, are, generally, a consequence of negligence, or want of cleanliness; sometimes, particularly in winter, they occur without any fault of the groom. After washing them with soap and water, and afterwards with warm water alone, that no soap may remain in the sores, take of finely-powdered alum one ounce; pipe-clay prepared two ounces; water enough to form them into a thin paste, about the consistence of cream. This paste is to be spread over the heel with a soft painting-brush, and repeated for three or four days, when the cracks will be nearly healed. The following ointment may then be applied: Take of bees-wax two ounces; olive-oil six ounces; melt them over a slow fire, then add of finely-powdered white lead two ounces—let the whole be thoroughly mixed. The horse should be turned loose into a box, and fed with

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bran-mashes; much exercise should be avoided. When the cracks are much inflamed, it will be necessary to apply a poultice for two or three days before the astringent paste is used.

CRADLE, a well known article used in the nursery, for the purpose of lulling children to sleep. Some respectable writers on the management of children, have recommended the total disuse of cradles, but to this we cannot agree. In numerous instances such conveniences are of essential service in allaying the irritation, and composing the minds of children, not only when in a state of disease, but also on a variety of other occasions, which those only intimately acquainted with the management of children can possibly know. For the comfort and convenience of our mothers, and our nurses, and the repose of our children, we here, therefore, enter our protest in favour of the long-used cradle, or the more recently introduced, and more elegant coddle; but whilst we do this, we must at the same time, most strongly deprecate the idle and slothful practices of too many nurses, and even mothers of children, who rock their infants hour after hour in the cradle, when they ought to be dandling them in their arms, or carrying them in the open air.

CRAMP, an involuntary contraction of the muscles, attended with a convulsive effort of the neck, arms, legs, &c. and also with a violent, but transitory pain. Aged, sedentary, and infirm persons are most liable to this complaint: and sometimes the drinking of certain liquors has been productive of the cramp, particularly in the lower extremities; keeping the limbs too long in one posture, or placing them in any unnatural position, will also frequently produce the cramp.

Cramps are often cured by compression; thus cramps in the legs are prevented, and sometimes removed, by tight bandages. When it is more obstinate, a brick should be heated, wrapped in a flannel cloth, and placed at the foot of the bed, against which the person troubled with the cramp, may place

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his feet. But perhaps the best remedy for cramps of the extremities is, diligent and long-continued friction.

CRAMP, in the stomach, is always attended with danger, and requires immediate attention. It most commonly attacks persons in the decline of life, especially the debilitated, the gouty, the hysteric, and hypochondriac. If the patient has an inclination to vomit, he ought to take some draughts of warm water, or weak chamomile tea, to cleanse the stomach; after this, if his bowels are not open, a laxative clyster may be given. All flatulent food or drink must be avoided. Perhaps a tea-cup full of strong beef-tea, taken every half hour or oftener, is as likely to remove this distressing complaint as any medicine which can be given. But the best advice which can be obtained should be had as soon as possible: for the administration of medicine in this complaint must depend upon circumstances, of which, few domestic prescribers are capable of judging. However, fomenting the region of the stomach with cloths dipped in warm water, or in a decoction of white poppy-heads, may at all events be adopted, and frequently with success; or bladders filled with warm water, may be applied, and renewed as they lose their heat. If cramp of the stomach arise from hard drinking and debauchery, or other debilitating irregularities, fits of anger, or other depressing passions, such causes of morbid action must be avoided, or medical counsel will be vain.

Cranberry. See **VACCINIUM**.

CRANE, or *Ardea*, in zoology, a genus of birds, consisting of ninety-six species, having a straight, long, and pointed bill, sub-compressed with a furrow from the nostril towards the tip; nostrils linear; tongue sharp; feet four-toed, cleft: toes connected at the base. Every quarter of the globe furnishes some of the species. The following are those only which we can notice.

The *Ciconia*, or White stork, inhabits Europe, Asia, and America; three feet three inches long; greater wing-coverts black; feeds on fishes and rep-

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tiles, and is in some countries held sacred for its uses in destroying serpents; sleeps on one leg; in autumn migrates in large and orderly flocks to the fens of Egypt and Barbary.

The *Major*, or Common heron, of which there are two varieties; inhabits almost every where in fenny places; is very voracious; preys on fishes and reptiles; builds frequently in trees, and lays four or five greenish-blue eggs; three feet three inches long.

The *Virescens*, or Green heron, of which there are four varieties, all beautiful; eighteen inches long; sits on trees; inhabits South America.

The *Stellaris*, or Bittern. See BITTERN.

CRANES-BILL, or *Erodium*, a genus of plants, consisting of thirty-five species, chiefly inhabitants of the warmer parts of Europe, and three common to our wastes or sea-coasts. They have all a general resemblance in their external appearance to the geranium, with which they have often been confounded. Some of the species were formerly used medicinally, but are expunged from the modern materia medica.

CRANIUM, in anatomy, the head, or skull. See SKULL.

CRAPE, a light transparent stuff, somewhat similar to gauze: it is made of raw silk gummed, twisted on the mill, and woven without crossing. It is of various colours, but chiefly black and white for mourning.

Crassamentum. See BLOOD.

Craw-fish. See CRAB.

CRAYON, a general name for any coloured stone, earth, or other substance used in designing or painting in pastel; whether they have been beaten and reduced to a paste, or are used in their primitive state, after being sawed or cut into long narrow slips.

The following is said to be an excellent method of making charcoal, and other crayon-colouring permanent.

The finest grained charcoal which can be procured is to be sawed into slips of the size and form required, and put into a pipkin of melted bees-wax, where

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they must remain near a slow fire, for half an hour or more, according to the thickness of the charcoal; they are then to be taken out, and when cool, are fit for use. By adding a small quantity of rosin to the wax, they may be made harder; or, on the contrary, the addition of a little butter, or tallow, will make them softer. Such crayons are cheap, and drawings made with them are as permanent as ink, and not liable to injury by being rubbed, or by damp. The same process will harden both red and black chalk, and make them permanent also.

CREAM, the most oily part of milk, which after remaining at rest a few hours, collects upon its surface, and is then skimmed off to be converted into butter, and for other purposes. See BUTTER, CHEESE, and MILK.

Cream is often drunk mixed with tea, coffee, and other liquids, and is generally considered an agreeable and nutritious luxury. It is also often used with pies and other pastry. The valetudinarian, and the dyspeptic, should, however, avoid the use of cream altogether, as it is very unsuitable to, and frequently disagrees with their stomachs.

Cream may be preserved thus: Take twelve ounces of white sugar, and dissolve it in the smallest possible quantity of water over a moderate fire. When it is dissolved, the solution should be boiled for about two minutes in an earthen vessel, when 12 ounces of new cream should be immediately added, and the whole mixed together while hot. Let it gradually cool and pour it into a bottle, which must be carefully corked. If kept in a cold place, it will remain sweet for weeks or even months.

Cream of Tartar. See TARTAR.

CREDIT, in commerce, a trust or loan of merchandize, or money, on the reputation, the property, or solvency of a dealer.

In transactions between individuals, we may be certain, that where long credit is given, either the articles are of inferior quality, or the charges are exorbitant: sometimes both. Persons who wish to be economical, should avoid

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credit generally, and most of all, long and unusual credit.

CRESS, WILD ROCKET, or *Sisymbrium*, a genus of plants, containing fifty-three species, scattered over the warm climates of the globe for the most part, four common to our own wastes, three to our marshes or rivulets. The following are chiefly entitled to notice.

The *Nasturtium*, or water-cress, a well-known plant, seen frequently at our tables. It grows in rivulets and ponds. It affords an agreeable variety as salad; but is of no importance as a medicine.

The *Sylvestre*, or Water-rocket, growing wild in our marshes.

The *Amphibium*, or Water-radish, growing wild in our rivulets.

The *Sophia*, or Flix-weed, growing wild on our wastes.

CRIB-BITING, a disagreeable and injurious habit which young horses sometimes acquire: it consists in their laying hold of the manger with their teeth, and apparently sucking in the air, making at the same time, a peculiar noise. The usual mode of preventing it is, to put a leather round the neck as tight as it can be, without impeding swallowing or breathing; or to cover the edge of the manger with a sheep-skin with the wool-side outwards; some recommend filling the manger with straw, others in taking away both rack and manger, and making the horse eat his hay from the ground, and his oats from a nose-bag. It is a bad vice, and should by almost any means be prevented.

CRICKET, a game now very common, performed with bats and a ball. For recreative sports, when attended with a suitable degree of exercise, we are great advocates. Cricket appears to us to be of too violent a kind; and besides, if played as a game of chance, for money, is decidedly wrong. Surely the fertile genius of man may find out and adopt much more suitable exercise and recreation without any very great exertion of the intellectual faculties.

CRICK-IN-THE-BACK, of Horses, is sometimes a very serious disease. In

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some cases it may be removed by rubbing the back with stimulating liquids, or by covering it with a fresh sheep-skin. When it cannot be removed by such means, the best thing to be done is, to cover the horse's back with adhesive plaster, and turn him to grass.

CRICKET, LOCUST, GRASSHOPPER, or *Gryllus*, a genus of insects consisting of not less than two hundred and one species. The insects of this family feed on plants and herbs, except those of the section *Truxalis* of Fabricius. The larvae and pupes resemble the perfect insect, reside chiefly under ground, and are six-footed, voracious, and active; they were the only animals of this class of which Moses permitted the Israelites to eat; and are at present used as an article of food by the natives of Africa and India.

The following are the chief:

The *Grylotalpa*, or mole-cricket, with a body of a dark chesnut brown. Inhabits gardens and cultivated places of Europe and America: it burrows below the surface of the earth, and is very destructive, eating and consuming the roots of trees.

The *Domesticus*, or house-cricket; an inhabitant of almost every house, about ovens and kitchen chimneys; makes a continual chirping, especially before rain; is often very troublesome and destructive; is said to forsake houses infested with the cock-roach. It may be destroyed by pills of arsenic, and the fresh root of the carrot, mixed with flour, or the root of the water-lily boiled in milk; or sugar and arsenic mixed together, as it devours sugar voraciously.

The *Campestris*, field-cricket, or Grasshopper. Inhabits Europe; chirps from the beginning of May till the equinox, and is said, when domesticated, to drive out the house-cricket.

The *Verrucivorus*, inhabits England and most parts of Europe; used by the common people of Sweden for destroying warts on the hands, which it is said to perform by biting off the excrescence, and discharging on the wound a corrosive liquor.

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The *Viridissimus*. The eggs of this species are deposited by the female, in holes, which she makes with a sword-like process, with which she is furnished, in the dried branches of trees.

The *Migratorius*, or Travelling locust; inhabits Tartary, and migrates in incredible swarms into various parts of Europe. They suddenly destroy all vegetation, leaving the most fertile provinces deserts, with famine and disease in their train. They have occasionally appeared in England, but have perished by the cold in a short time.

They are caught by nets in the east, and eaten as food, being previously roasted; they are said to eat like cray-fish.

Crime. See PUNISHMENT.

CRIMSON, a rich and beautiful red colour, having a trifling tinge of blue; the best vermilion is crimson. See COLOURS, and DYEING.

CRITICAL DAYS, those days carefully marked by Hippocrates, on which continued fevers were said to terminate: they were the third, fifth, seventh, ninth, eleventh, fourteenth, seventeenth and twentieth. How much soever these days might suit the Greek diseases two thousand years ago, they are by no means applicable to modern medicine.

CRITICISM, the art of estimating correctly whatever can become the subject of judgment, whether in morals, science, or the arts. Criticism, therefore, does not consist in finding fault, and exposing blemishes, as too many smatterers in this science erroneously suppose; but in determining the truth, utility, or beauty of a performance; and for this purpose extensive knowledge, sound judgment, and refined sensibility, are absolutely necessary. Tried by this standard, how few who assume the office of criticism are equal to the importance of the task.

CROCODILE. See LIZARD.

CROCUS, a genus of plants consisting of three species, all common to the meadows of our own country, as follow:

The *Sativus*, which flowers in au-

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umn, and produces the substance well known, called SAFFRON, which see.

The *Vernus*, or CROCUS, a yellow flower well known in our gardens, blossoming in March, and propagated by parting the roots.

The *Nudiflorus*.

CROCUS, in chemistry, a term given by the older chemists to several preparations of metallic substances, from their resemblance to the colour of saffron: thus *crocus martis*, *crocus metallorum*, &c.

Crocus of Antimony. See LIVER OF ANTIMONY.

Crocus Martis. See IRON, and COLOUR-MAKING.

CROP, in agriculture, the whole produce of a field cut, mowed, or dug up at one time. The ROTATION OF CROPS, forms one of the distinguishing features of improved modern agriculture. See HUSBANDRY.

CROPPING, the operation of cutting off a part of the ears of a horse, dog, or other animal. The practice of cropping the ears of animals, as it is confessedly useless, if not pernicious, by producing some imperfection in the hearing, ought surely to be avoided.

Cross-bill. See GROS-BEAK.

CROUP, or *Cynanche trachealis*, is an inflammation of the glottis, larynx, or upper part of the trachea, and sometimes proves fatal in consequence of the trachea becoming obstructed by a membranous substance lining the inside of it, which produces suffocation. This disease seldom occurs in adults; but is frequent in children under twelve years of age.

The attack is in general preceded by symptoms resembling a common cold; but sometimes it comes on suddenly, beginning with a slight soreness of the throat; a hoarseness, with some shrillness, and a ringing sound both in speaking and coughing as if the noise came from a brazen tube, are also distinguishing characteristics of the disease. There is also a sense of pain about the larynx, some difficulty in respiration, with a whizzing sound in inspiration, as if the passage were strait-

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ened. The cough which attends this complaint is commonly dry ; and if any thing be spit up it is matter of a purulent appearance and sometimes films resembling portions of a membrane. There is also a frequency of pulse, a restlessness, and an uneasy sense of heat. The fauces are sometimes without apparent inflammation, but they are at others frequently red, and even swelled. As the disease increases, the pulse quickens, the heat augments, and an excessive restlessness takes place ; the breathing becomes more difficult, the cough more frequent, and the peculiar wheezing sound may be heard at a considerable distance. The symptoms continuing to increase in violence until a spasm of the muscles taking place, the patient is suffocated. The disease often completing its course in the space of three or four nights.

In this complaint immediate application should be made for the best medical assistance ; but if that cannot be procured, from three to six leeches, according to the age and strength of the patient, may be applied to the upper and fore-part of the neck, and the bleeding promoted by the application of cloths wrung out of warm water. As soon as the leeches fall off, and before the bleeding has ceased, the patient may be laid between blankets, and supplied with warm barley-water, to excite sweating, the front of the neck being covered with a blister. Emetics will also be found of considerable service, and should be had recourse to immediately after the abstraction of blood, whether by leeches or by the lancet. Clysters will also be found useful. Vegetable food only, and slightly acidulated drinks, should be given.

In order to guard against this disease, great care should be taken that children be not exposed to extremely cold air for any considerable time ; and if they should happen to be so exposed, greater care is yet necessary that they be not suddenly brought into a warm room, by a warm fire, &c. : for from this cause, as mentioned under the article CATARRH, do many serious dis-

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eases arise, particularly those of the throat and lungs ; and, most probably, the disease of which we are now treating. Some cases have, however, been mentioned, where the croup was brought on by excessive exertion of the voice by hollowing, screaming, &c. ; these of course ought also to be guarded against or prevented.

CROUT, or **SOUP CROUTE**, a preparation of cabbage, originally invented by the Germans, and made thus : The soundest and best cabbages are cut very small, put into a cask in layers about a hand high, over which is strewed a handful of salt and caraway seeds, each layer being closely rammed down till the cask is full. After standing some time to ferment, and the fermentation having subsided, it is closely headed up. This preparation has been found of great efficacy as an antiscorbutic in long sea voyages, particularly in those round the world, performed by Captain Cook.

CROW, or *Corvus*, a genus of birds consisting of forty-eight species, scattered over the globe. The greater part of this tribe are found in every climate. They are prolific, social, clamorous ; build generally in trees, lay five or six eggs ; their food is mixed animal and vegetable ; the bill is convex, sharp-edged, and has a small tooth-like process, on each side near the point. The following are some of the chief :

The *Corax*, or Raven, of many varieties : black, or blueish black ; with a few scattered white feathers ; entirely white ; and variegated with black and white. Two feet two inches long ; inhabits Europe, North America, and New Spain ; feeds on carrion, fishes, weak lambs, dead sheep, &c ; thievish and noisy ; builds in high trees or rocks ; eggs bluish green ; may be taught to speak. The Greenlanders eat the flesh, make the skin into garments, and the split feathers into fishing lines.

The *Corone*, or Carrion crow, entirely black ; two other varieties, one variegated with white, the other entirely white. Inhabits Europe, Siberia, North America, New Guinea, New Holland,

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and Madeira; eighteen inches long; feeds on carrion, or small weak animals; on fruit and grain; troublesome to corn lands; builds in lofty trees.

The *Frugilegus*, or Rook; black, with a bill yellowish white; inhabits Europe and western Siberia; flies abroad morning and evening in great flocks; builds in large communities, called rookeries; is very noisy, and feeds on worms and the *larvæ* of insects, particularly beetles, and corn: flesh, when young, very good.

The *Cornix*, or Hooded crow; dark ash-colour, head, throat, wings, and tail black; inhabits Europe and Asia. Twenty-two inches long; feeds on almost every thing; in Sweden destroys innumerable *larvæ* of destructive insects; eggs bluish green, with blackish brown spots.

The *Monedula*, or Jackdaw, of which there are numerous varieties, brown, white, bright black; wings white, with a white collar round the neck; inhabits Europe and west Siberia; one variety, Persia: feeds on insects, grain, and seeds; builds in old turrets or lofty rocks; is very gregarious, easily tamed, and thievish: thirteen inches long.

The *Glandarius*, or Jay; wing converts blue with transverse black and white lines; body rusty, pale purple, mixed with grey; two varieties. Inhabits the woods of Europe and Siberia; thirteen inches long; very docile, restless; easily tamed, and taught to speak; eggs six, of a dull olive, spotted, the size of a 'pigeon's'; collects nuts and other fruit, and hides what it cannot eat; feeds on corn, small birds, &c.

The *Caryocatactes*, or Nut-cracker, brown, dotted with white; wings and tail black. Inhabits Europe and Siberia: thirteen inches long; lives chiefly in pine forests, collects and feeds on insects, berries, and nuts.

The *Pica*, or Magpie; four varieties: variegated black and white; variegated sooty black and white; body longitudinally streaked with black and white; and totally white. Inhabits Europe, North America, and Asia; eighteen

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inches long; may be easily tamed and taught to imitate the human voice; builds in trees; covers over its nest with thorns, leaving a narrow entrance; destructive to gardens and orchards; eggs greenish with dusky spots.

The *Graculus*, or Red-legged crow; violet-blackish; bill and legs red. Inhabits the Alps, Norway, England, Egypt, and Persia; sixteen inches long; restless, clamorous, and voracious; thievish and gregarious, builds in rocks, and feeds on juniper berries and insects; pleased with glitter, and apt to catch up bits of lighted sticks, by which means mischief is often produced. Eggs spotted with yellow.

The whole of this genus of birds have been vulgarly considered as mischievous and destructive. But we think them a very useful tribe of animals, and that the trifling mischiefs and depredations which they commit, are very much out-weighed by the good which they do in the consumption of worms, slugs, snails, &c.; so injurious to the fruits of the earth.

CROW-FOOT, Butter-cup, Butter-flower, or *Ranunculus*, a genus of plants containing fifty-nine species, scattered over the globe; fifteen indigenous to our own country. The following are the chief:

The *Asiaticus*, Persian crow-foot, or garden ranunculus; flowers terminal, with the stem naked for a considerable length below them; vary much in size and colour; appear in May; may be protracted, in the shade, for a month; seeds ripe in July. A native of Asia and the Levant. The varieties are exceedingly numerous, and partitioned into two sections, the old Turkey and the Persian; the varieties of the latter amounting to many hundreds, and much richer and more beautiful than those of the preceding.

All the varieties of the first sort may be readily increased by offsets taken from the roots, and new varieties may be raised from seeds. The roots should be planted early in the spring. February, if the weather be fine, is the best month.

For the propagation of the second

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sort, the seeds should be used in preference to any other method ; and they should be collected from the best plants of the semi-double kinds ; and be sown in flat pans, or boxes, filled with light rich earth in August.

The *Aconiti folius*, or Aconite-leaved crow-foot ranunculus, is a very handsome plant, three or four feet high and branchy ; the flowers white, terminal on each branch ; a native of the Alps.

The *Repens*, or Creeping crow-foot, with a perennial root, flowers in June ; and found wild in our meadows. There is a variety cultivated in gardens with double flowers.

The *Amplexicaulis*, or Embracing-leaved crow-foot : flowers white ; a graceful plant ; native of the Apennines and Pyrenees. Flowers in April and May.

The *Acris*, or Upright meadow crow-foot, or Gold-cup, with a perennial tuberose root, stem upright, two feet high, round, hollow, hairy, and branchy at top. Found wild in our meadows ; flowers yellow ; blossoms in June and July.

There is a variety with double flowers, chiefly cultivated in gardens, and known by the name of yellow bachelor's buttons.

This, and some other species of the ranunculus, have been employed chiefly for blisters ; but, they are sometimes uncertain in their operation, and leave ulcers, which prove very troublesome and difficult to heal. They are more suitable to be applied to an abraded part as an issue ; but are, notwithstanding, scarcely heard of in medical practice.

On being chewed, the leaves corrode the tongue, and, if taken into the stomach, bring on all the deleterious effects of an acrid poison. It is necessary to observe, that the acrimonious quality of these plants is not of a fixed nature, for it is completely dissipated by heat, and the plant, on being thoroughly dried, becomes perfectly harmless. Hence, the green and growing plant is uniformly rejected by cattle, but when cut, dried, and made into hay with

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other herbage, is consumed with the rest.

The *Flammula*, Small water crow-foot, or spear-wort, grows wild in the wet marshes of our own country ; it is of much the same nature as the preceding.

The *Ficaria*, or Pile-wort, found wild in our hedges.

The *Sceleratus*, or Water crow-foot, found in marshy places in our own country, and other parts of Europe. The leaves of this species are also extremely acrid.

All the species of the ranunculus may be easily propagated by roots, which should be slipped or parted in autumn, when the plants have done flowering, or in the spring, before they begin to shoot.

Crow-garlic. See GARLIC.

CROWN-SCAB, a scurfy eruption, round the coronet, in the foot of the horse. It should be well washed with soap and water, then dressed with yellow basilicon, or the ointment of nitrated quicksilver, by which it will be soon cured.

CRUCIBLE, a pot of a certain shape, made either of baked or unbaked clay, black-lead, platina, &c. ; and used for a variety of chemical purposes where a strong and intense heat is required, and in which the crucible commonly retains its form and structure without melting.

CRUELTY, a savageness of action or of conduct, regardless of the rights, claims, feelings, and wants of others. Cruelty is often exemplified in a gross and positive infliction of bodily suffering ; such cruelty is bad, and to be deprecated ; but there is an insidious and more dangerous species of cruelty, against which our readers cannot be too much on their guard, viz. that of contemplating the sufferings, wants, distresses, and miseries of mankind, both corporeal and mental, without exerting any effort to relieve them. This species of cruelty is often strongly exemplified in the conduct of the mere lawyer, the statesman, leaders of large bodies of men, the soldier, the parish

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overseer, the gaoler, the judge of criminals, the criminal himself, persons in poverty, and the *possessor of uninterrupted worldly prosperity*; and also many others whose habits are destructive of those kindly affections, by the cultivation of which cruelty can only be obliterated. To the honour of our species, there are brilliant exceptions to be found in many of these classes; but such situations are the fruitful sources of this degrading vice, and those who happen to be placed in them, cannot be too much upon their guard to prevent the introduction of such demoralization of the human mind.

CRYING, the act of weeping, usually accompanied with tears; it is, however, more generally applied to the squalling of children.

The crying of very young children, we may be quite certain, arises from some uneasiness or pain, and, therefore, whenever a child cries, if it be not for food, or if, when food be given, or offered to it, it still continues its noise; or, if it do not suffer from fatigue, which may be removed by setting it to sleep, all its dress should be examined, so that we may be assured no pins, or other inconvenience about the clothes, incommodate it. If, after such examination, no cause for its crying can be discovered, the most probable one is wind, or acidities in the stomach or bowels. A small quantity of magnesia is then the best remedy. But instances sometimes occur when no possible cause for the crying of children can be discovered, and where they will cry for hours without interruption, accompanied with contortions of the limbs, indicative of considerable pain. Kindness and soothing is, even here, the best remedy; nor is friction of the contorted limbs of trifling consideration.

The crying, however, of older children may, doubtless, be increased and promoted by improper indulgence, and, therefore, such indulgence should be avoided. See **INFANCY** and **TEETHING**.

CRYSTAL, a species of stone of various colours, of which that most generally known is the *pebble-crystal*, or *spig*, or *rock-crystal*, as it is usually

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called. It is common in this country, and is frequently cut into chandeliers, vases, lustres, and other ornaments.

CRYSTAL also implies the particular form which various saline and metallic bodies assume in certain situations, sometimes alone, and sometimes combined with water; or even that of water alone when in the state of ice.

CRYSTALLIZATION, the act of forming crystals; it also implies the art of producing crystals.

To enable the particles of bodies to assume that regular form which saline and other crystals exhibit, it is obvious that they must have freedom of motion, and, accordingly, the first step towards obtaining a body in its crystalline form is to confer upon it either the liquid or æriform state. The former is usually effected by solution in water; the latter by exposure to heat. There are certain bodies which may be dissolved or liquified, by heat, and during slow cooling may be made to crystallize: such is the case with many of the metals, and with sulphur. Others, when heated, assume the state of vapour, and, during condensation, become regular crystals; such as iodine, benzoic acid, camphor, &c.

The hardness, brilliancy, and transparency of crystals, often depend upon their containing water, which sometimes exists in them in large quantities. Crystallization is often accelerated by the introduction of a solid body into the solution, and manufacturers often avail themselves of this circumstance; thus candy is crystallized upon strings, and verdegris upon sticks.

Air, light, and agitation, will increase, or produce crystallization, under certain circumstances.

Crystallized bodies generally take one form in preference to another. The fluor-spar of Derbyshire crystallizes in cubes; so does common salt. Nitre assumes the form of a six-sided prism, and sulphate of magnesia that of a four-sided prism. These forms, however, are liable to vary. Fluor-spar and salt crystallize, sometimes, in the form of octoëdra, and there are so many forms

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of carbonate of lime that it is difficult to select that which most commonly occurs.

Those who are in the habit of cutting and polishing certain gems, know that they only afford smooth surfaces, when broken, in one direction, and that, in all others, the fracture is irregular and uneven. And this is the case with crystallized bodies in general.

We frequently read the chemical nature of substances in their mechanical forms, particularly those of crystallization. In the arts, the process of crystallization is turned to very valuable account, in the separation and purification of various substances.

Cubebs. See PEPPER.

CUBIT, among the ancients, a long measure equal to the length of a man's arm, from the elbow to the tip of the fingers. Dr. Arbuthnot makes the English cubit equal to eighteen inches; the Roman cubit equal to 1 foot 5.406 inches; and the cubit of the Scripture equal to 1 foot 9.888 inches.

CUCKOO, or *Cuculus*, a genus of birds, containing fifty-five species, scattered over the globe. The following are most worthy of notice.

The *Canorus*, or Common Cuckoo, of an ash-colour, beneath whitish, transversely streaked with brown. Two other varieties, one with body varied with reddish, the other grey-waved, with a few white dots. Inhabits Europe, Asia, and Africa; fourteen inches long, feeds on insects and the larvæ of moths; migrates; is heard towards the end of April, and ceases to sing about the beginning of July. Flesh good. The cuckoo neither makes a nest nor hatches its own eggs; but, generally, deposits them in the nest of the hedge-sparrow, leaving the care of its young to foster parents: it is not known to lay more than one egg in any one nest. They are reddish-white, thickly spotted with blackish-brown, and about the size of a blackbird's. When hatched, the young cuckoo is said to turn out either the eggs, or the young ones of the hedge-sparrow, with its broad hollow back. The song of the cuckoo is the note of

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the male alone; the female's is very different, much less known, and has some resemblance to the cry of the dachchick. The female is generally attended by two or three males in every country, from the earliest period of their arrival.

The *Indicator*, or Honey-guide cuckoo, a rusty grey, is fond of honey, and inhabits the interior of Africa; its note resembles *chern*, *chern*, by which it is said to conduct the inhabitants to the wild hives of the bees. Hence, it is highly esteemed by the Hottentots, who deem it criminal to injure or destroy it.

The *Honoratus*, or Sacred cuckoo, having a blackish body, spotted with white, inhabits Malabar; feeds on reptiles injurious to vegetation; hence preserved with great care, and venerated by the natives.

The *Vetula*, or Long-billed rain cuckoo, inhabits woods and shrubs in Jamaica; is easily tamed, and sings before rain; flies short, and feeds on insects, worms, and small serpents, &c. Fifteen inches long; with a brownish body and long bill.

Cuckoo Flower. See CARDAMINE.

CUCKOW-PINT, Wake-robin, or *Arun*, a genus of plants containing thirty-two species, scattered over the globe. It is a native tree of Guiana.

The *Maculatum* is a perennial indigenous plant, growing under hedges and on the sides of banks, flowering in May, and ripening its berries in August. The root of this species is medicinal, and, when recent, very acrimonious. It is employed as a stimulant in chlorotic, rheumatic, and paralytic cases, mixed with oleaginous or mucilaginous substances. But it is uncertain in its operation. The dose, in substance, is from ten grains to one scruple, three or four times a day, combined with mucilage, milk, thick barley-water, or rubbed with gum and water, so as to form an emulsion.

CUCUMBER, or *Cucumis*, a genus of plants containing thirteen species, chiefly natives of India and the Levant. The following are the principal:

CUCUMBER

The *Colocynthis*, with globular smooth fruit. See *COLOCYNTH*.

The *Chate*, or Hairy cucumber, a native of Egypt and the Levant. It has something of the shape and taste of the melon, but is neither so cool nor so fragrant; yet it is esteemed a considerable luxury.

The *Melo*, or Melon, a native of Persia, the angles of the leaves rounded; fruit swelling with carbuncles, or other protuberances. The chief varieties are the Canteloupe, the Roman and the Portugal melon. In general, these are raised too early among ourselves, and, consequently, acquire an insipid maturity from having been too little exposed to the full strength of the summer sun.

The culture of the melon is as follows: theseeds should be procured from good melons, produced in some distant garden; it should be kept three years before it is sown, and should be sown at two seasons: the first, for the early crop, to be raised under frames, in January, or the beginning of February; the second, to be raised under bell, or hand-glasses, is to be sown in March; and this is the sowing which produces the general crop of melons which ripen in July and August. The hot-bed for the first crop may be of the same kind, or with the addition of coal-ashes, and the same methods may be pursued with the plants as are mentioned below, under common cucumber; but, for the second, the sowing may be on the upper sides of the hot-beds, used for the early melons, or cucumbers, or on a fresh moderate hot-bed. When the young plants are come up, they must be removed to another hot-bed, and covered with hand-glasses, and watered and shaded till they have taken root; after which, they must have air and sun as the season will permit, and their stalks must also be earthed up. In the beginning of April the plants will begin to show their rough leaves, and a parcel of dung is then to be prepared with litter and coal-ashes, and placed in a trench dug ten inches deep, but only three if wet. The dung must be laid in the trench three feet high. Holes must be

marked out in the dung, in which must be laid a basket full of rich light earth, thrusting a stick of two feet long into the middle of each. The dung must be covered all over with the earth taken out of the trench, laying it smooth, and about three inches thick; glasses are then to be placed close down over the places where the sticks are, and in two days the earth will be warm enough to receive the seedling plants. The sticks are now to be taken out, and the earth formed in the places into a hollow like basons, that they may retain the water given to the plants. Two plants must be set in each place, and shaded from the sun; when they have taken root, and put out the fourth leaf, the top of each of them should be pulled off, in order to force out shoots from the bottom. The glasses must be raised on the south side to give them air as the weather becomes warmer; and about twice a week they should have a little water. About the middle of May the plants will begin to fill the glasses, when they should be raised on bricks to give them room to run out; and they should be pegged down with forked sticks in a proper direction. They should now, if the weather be severe, be sheltered with mats, and watered gently at times. When the stalks of the plants have grown to the edges of the bed, the earth must be raised with old dung buried under it, till it is on a level with the bed for two feet wide on each side; the branches are to be trained properly, the glasses left over the roots of the plants, and, after this, what water is given them must be sprinkled all over the plants. When the fruit begins to appear, the waterings must be very gentle on the plants, but it will be proper to soak the earth well with large quantities of water about the beds. When the melons are grown to the size of a tennis ball, a piece of a tile should be laid under each to keep it from the ground, and as they ripen they should be turned several times, in order that they may ripen equally on every side; and, if the weather be not very favourable, they should be covered

CUCUMBER

with glasses. None of the leaves should be stripped off the fruit to give it sun : the doing so spoils their flavour. If the melon be designed to be eaten as soon as cut, it should remain on the plant till it becomes pretty yellow. But if it be to be kept two or three days after cutting, it must always be cut proportionably earlier.

The *Sativus*, or Common cucumber, with angles of the leaves straight ; fruit oblong and rough. The chief varieties are the common green, short green, long green, and long white Dutch : all of which are prickly ; the early green cluster ; the long smooth green Turkey ; the long smooth white Turkey ; and the long smooth green Roman cucumber.

The cultivation of all these is not essentially different. The first variety is more generally resorted to than any of the others ; it is raised at three different seasons of the year : the first in hot-beds, under frames, for early fruit ; the second, under glass-bells, or hand-glasses for a middle crop, and, lastly, in the common ground and atmosphere for pickling.

The hot-bed should be made in the beginning of January of fresh horse-dung, which becoming hot in four or five days, should be covered with good fine earth about two inches thick, over which the frame or hand-glass should be placed ; the seeds being sown about two days after, or as soon as the earth has become warm. The seeds should be covered with a quarter of an inch of fresh earth, and the glass set over them as before. The glass must be covered with a mat at nights, and in four days the young plants will appear ; when these are seen, the rest of the dung must be made up into a bed for one or more lights. This must be three feet thick, and beat close together, and covered three inches deep with fine fresh earth ; the frame must then be put on, and covered at night or in bad weather with mats. When the earth is hot enough, the plants from under the bell must be transplanted into it, and set at two inches distance. The glasses must

be now and then a little raised to give air to the plants, and turned often to prevent the wet steam of the dung from dropping down upon them. The plants must be watered at times with water placed in a vessel on dung till it become as warm as the air in the frame ; as the plants grow up, their stalks should be earthed up. If the bed be not hot enough, some fresh litter should be laid round its sides ; and if too hot, holes should be made in several parts of it with a stake to let out the heat. When the plants begin to shoot their third rough leaf, another bed must be prepared for them like the first, and when properly warm through the earth, the plants in the other bed must be taken up and planted in this, in which there must be a hole in the middle beneath each light of about a foot deep, and nine inches over, filled with light and fine fresh earth laid hollow, and in the form of a bason ; in each of these holes must be set four plants ; they must be, for two or three days, shaded from the sun, after which they must have all the sun they can, and now and then a little fresh air, according as the weather will permit, being also watered occasionally. When the plants are four or five inches high, their stalks should be gently pegged down towards the earth in different directions, so as not to interfere with one another ; and the branches afterwards produced should be treated in the same manner. In a month after this the flowers will appear, and soon after the rudiments of the fruit. The glasses must now be carefully covered at night, and in the day time the plants should have gentle waterings. These will produce fruit till about midsummer, at which time the second crop will supply their place ; these are to be raised in the same manner as the early crop, but they do not require so much care or trouble. The second crop should be sown at the end of March or beginning of April.

The season for sowing cucumbers for the last crop, and for pickling, is towards the latter end of May, when the weather is settled. They should be sown in fine mellow earth. The plants

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of this crop will begin to produce fruit in July.

Cucumbers may be also propagated by layers : as soon as several flower-buds appear on a plant, the third joint below the blossom is to be bent, and fastened firmly below the earth, and the capillary point of the plant is then to be cut off. It speedily takes root, and may be separated from the parent stock : by this process a constant succession of cucumbers even for twelve months may be raised.

We have been somewhat minute in detailing the method of raising this common and much-eaten vegetable ; but we are, notwithstanding, by no means advocates for it. It is most certainly often eaten without the least inconvenience ; but it is, in innumerable other instances, a very improper kind of food. The valetudinarian and the dyspeptic should always avoid it. And although the active and robust frequently eat it with impunity, it contains such a small quantity of nutrition, that it may be, even by them, most easily dispensed with. Having said thus much of the cucumber, we cannot recommend it when pickled : if cucumbers in their raw state be not wholesome, PICKLED ones are undoubtedly much less so.

Cucumber, wild, or Squirting. See WILD CUCUMBER and ELATERIUM.

CUD, that substance contained in the first stomach of a ruminating animal, which is disgorged, chewed again at leisure, and passed into the second stomach and digested.

The *loss of the cud*, or the suspension of the process of rumination when the animal is poor and out of condition, may be restored by such medicines and food as brace and strengthen the system. With this view, warm mashs of bran and ground oats are first to be given ; then the animal may take from four to six drachms of each aloes and rhubarb ; of salt of tartar half an ounce ; of aniseeds powdered one ounce, mixed together in gruel, for one dose. He should also have sweet hay in small quantities at a time ; and, after two or three days, the following drench may be given : take of Peruvian bark and gen-

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tian root in powder, of each half an ounce ; of ground ginger a tea-spoonful ; or the same quantity of cayenne pepper, which last is to be preferred ; warm and good ale a pint. This drench may be given twice a day, and continued for some time ; or it may be omitted occasionally, and in its stead may be given a strong infusion of chamomile flowers and cloves, to the quantity of a pint. The common medicines recommended for this complaint, such as alum, vinegar, &c. are all highly improper.

CUDWEED, EVERLASTING GOLDY LOCKS, or *Gnaphalium*, a genus of plants containing one hundred and forty-six species, scattered over the globe, but by far the greater number Cape plants ; nine indigenous to the pastures, marshes, or mountains of our own country : some are shrubby with white or yellow flowers, other are herbaceous with white or yellow flowers. The shrubby sorts admitted into gardens, are generally propagated by slips or cuttings, which may be planted in June or July in a bed of light earth ; those which are natives of warm countries should be covered with glasses, or shaded with mats, observing to refresh them frequently with water in gentle quantities. The more hardy natives of France, Germany, and other parts of Europe, will live in the open air in England. The annuals are propagated by seeds. The mountain Cudweed, or Cats-foot, the African goldy locks, the Virginian goldy locks, the blunt-leaved goldy locks, and the *stachas*, are species of this genus which have attracted more or less attention.

CULMIFEROUS PLANTS, in botany are such as have a smooth jointed stalk, usually hollow, and at each joint wrapped about with single narrow sharp-pointed leaves, and their seeds contained in chaffy husks ; as wheat, barley, &c.

CULTIVATOR, an implement now used very frequently in the improved management of arable lands. See HUSBANDRY.

CUMMIN, or *Cuminum*, a genus of plants having one species only, a native

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of Egypt, but is cultivated in Sicily and Malta, whence the seeds are brought to this country.

Cummin-seeds have a strong peculiar heavy odour, and a warm bitterish disagreeable taste. They are carminative and stomachic; but are chiefly employed as a stimulant in a plaster, called *cummin-plaster*, applied to the lower belly in flatulencies, and a cold feeling of the bowels; and to indolent tumours. They are also used given as a carminative and cordial to cattle.

CUPPING, in surgery, the operation of applying a scarifying machine, and CUPPING GLASSES, which are formed somewhat like a bell, for the discharge of blood from the skin.

CURB, a chain of iron made fast to the upper part of the branches of the bridle in a hole called the eye, and running over the beard of the horse. Large curbs, provided they be round, are always the most gentle.

CURB is also the name of a tumour situated on the back part of the hinder leg of a horse, immediately below the hock. Blistering generally cures it, but if it does not, the actual cautery or firing must then be resorted to.

CURD, the *coagulum*, or more solid parts of milk. See CHEESE.

CURIOSITY, is that state of mind in which a desire is evinced to see, hear, or obtain that which is not usually and commonly to be seen, heard, or obtained: for whenever any thing becomes common, it ceases to excite our curiosity, and generally ceases, how curious soever in itself it might be, to be considered as a curiosity. We notice this state of mind principally to observe, that a curiosity upon important subjects, and those which contribute to our moral and physical well being, is praiseworthy and ought to be encouraged: such is the desire for the acquisition of any art or science, &c. but that curiosity which tends to excite in our fellow men an undue opinion of their station and their acquirements, the curiosity for parade and show, for dress, and mere exterior, is mischievous and should be repressed. If many persons who now too commonly

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excite the curiosity of mankind, and who are sought after and gazed upon by the multitude, were deprived of such improper excitements to their ambition, a more deadly blow could not be given to that vicious distinction in society which a weak and silly curiosity is calculated to foster, and even to produce.

CURLEW, or *Scolopax arquata*, one of the fifty species of the genus of birds called SCOLOPAX. Of this genus fifteen are common to our own country: it includes the curlews, woodcocks, godwits, whimbrels, green, yellow, and red shanks. We shall select a few examples.

The *Arquata*, or common Curlew, with a long arched blackish bill; frequent on the sea coasts; in summer they retire to the mountains, where they pair and breed. Flesh rank and fishy; by some thought good. Inhabits Europe, Asia, and Africa.

The *Rusticola*, or Woodcock, with a straight bill reddish at the base. There are five or six varieties, with white or pale straw-coloured body, spotted, or otherwise diversified; fifteen inches long; flesh and intestines good; in the summer they retreat, in France to the loftier mountains, and in England towards the mountainous regions of Norway and Sweden; but a few remain in England the whole year. They are found as far south as Smyrna and Aleppo, and Barbary; and as far east as Japan. They are also found in Canada, and Cape Breton.

The *Gallinago*, or common Snipe, with a straight long bill, is well known. It migrates partly, and partly breeds in England during the summer, when it generally resorts to the higher grounds. Lays four or five dirty olive eggs, spotted with red spots. Flesh excellent, and dressed in the same manner as the woodcock, without taking out the intestines.

The *Gallinula*, or Jack Snipe, eight inches and a half long; body variegated. Inhabits Europe, Asia, and America.

The *Leucophæa*, or Godwit, inhabits Europe, is sixteen inches long; migratory, appearing in September and

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through the winter in England. They are often taken in Lincolnshire, and fattened for the London market; and are sometimes sold for five shillings each.

The *Phæopus*, or Whimbrel, with an arched bill and brownish body, inhabits Europe and America; found also in our own country, half the size of a curlew.

The *Glottis*, or Green-shank, with a straight bill, legs greenish and very long, inhabits Asia, Africa, and America, and found, with one or two other species, in our own country: fourteen inches long.

CURRENT, or *Ribes*, a genus of shrubs, consisting of seventeen species, natives of Europe or America; seven of our own country; they may be divided into unarmed, or *currants*; and armed, or *gooseberries*. The following are cultivated:

The *Rubrum*, or Common red currant; common to our own woods. It yields numerous varieties, as, common currant with small red fruit; the same with white fruit; with pale fruit, usually called champagne currant; but since the white and Dutch currants have been introduced, the older sorts have been almost banished, and are now rarely found.

The *Nigrum*, or Common black currant, common to our hedges. Of this there are also several varieties, and, especially an American currant which has a taste like cranberries. The juice is frequently boiled down to an extract with a certain quantity of sugar, and is very useful and pleasant in sore throats and complaints of the fauces.

The *Grossularia*, or Gooseberry. See **GOOSEBERRY**.

The *Orycanthoides*, or Hawthorn-leaved currant, with branches every where prickly; colour, at first, simple purple; but, when ripe, dark with a blue bloom; a native of Canada.

The *Cynosbati*, or Prickly-fruited currant; berries armed with prickles; a native of Canada.

Currants are propagated, easily, by planting their cuttings any time from September to March, watering them in

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dry weather. When they have stood about two years in this place, they may be transplanted to the places where they are to remain; and this should be done when the leaves are just decayed, that they may have time to become rooted before winter. If they are for standards they should be planted in rows of ten feet distance from one another, and the trees in each row four feet from each other; but the better way is to train them as espaliers, by which their fruit becomes much finer. If planted against wall, or pales, the same distances are necessary; and by having them on the north, as well as the south side of a wall, a succession of them is kept up for many weeks, those on the north ripening much later than those on the south. Currant-trees produce their fruit on the former year's wood, and also on small snags which grow out of it. This may be a caution as to the manner of pruning them. They thrive in almost any soil or situation, but the fruit is always best on a dry soil, and an open spot of ground.

The fruit of the currant is an agreeable and pleasant variety of our summer fruits; and if eaten ripe, and in moderate quantity, is salubrious, and gently relaxes the bowels.

CURRENT, or **CORINTH**, a small dried raisin brought from the island of Zaute, in the Mediterranean. See **RAISIN**.

CURRYING, the art of dressing ox, cow-hides, calf-skins, &c. The principal object in this process is to soften and supple the skins, which have previously been tanned for the purpose, so as to make them proper for the upper leathers of shoes, boots, &c.

CURRYING, a manual operation performed on horses, with an instrument called a currycomb; and for horses, and other animals confined to the stable, may be of service: but it does not appear that those animals which are well fed, and have their liberty, stand at all in need of this operation.

Cushion. See **LAVENDER** and **SAXIFRAGE**.

CUSTOM, in morals, that which we

CUT

have been in the habit of doing for a long period. Whether custom influence opinion, or opinion introduce custom, they both operate upon the understanding, and often manifest their power by the number and magnitude of the absurdities, which they render familiar and acceptable to the mind. Custom often sanctions the most inveterate hatred; it consecrates immoralities, and dignifies prostitution and murder. In India, custom loads with disgrace the Gentoo female, who refuses to expire in torments, amidst the flames kindled to consume the dead body of her husband; and, in some of the most enlightened countries of Europe, custom enjoins the man of honour to shoot his best friend for a hasty expression, or other indication of momentary transport! Custom has too often represented the Universal Parent as a tyrant, instead of the **BENEVOLENT FRIEND** of mankind. It is, however, most devoutly to be hoped that the *reign of custom* is arriving fast to its final termination, and that Knowledge and Benevolence will establish another empire, and better laws.

CUT, OF THE FINGER, is a very common accident, and, in most cases, nothing more is necessary to be done than to bind it up with a rag, or soft lint, taking care that no dirt, or other foreign matter, remains in the wound. If the bleeding be very profuse, a bit of lint dipped in compound tincture of benjamin may be first applied, and the bandage placed over it; but, in general, this is by no means necessary. The bandage should remain undisturbed if the part be not painful, for twenty-four hours at least; and previously to removing it, it should be soaked in warm water, that no violence may be used in its removal. The application of a plaster of wax cerate will, in general, afterwards be sufficient for a cure. If such accident become painful, attended with much swelling of the part, a medical practitioner ought to be consulted. In the mean time, opening the bowels and living sparingly will be advisable. See **WOUNDS**.

CUT

CUTICLE, the Scarf-skin, or *Cuticula*, a thin, pellucid, insensible, membrane, of a white colour, enveloping the whole body, and which covers and defends the true skin, with which it is connected by the hairs, exhaling and inhaling vessels, and the *rete mucosum*. See **SKIN**.

CUTIS, the Skin. See **SKIN**.

CUTTLE-FISH, **INK-FISH**, or *Sepia*, a genus of fishes, consisting of eight species. These animals have a mouth resembling a parrot's beak; they have a fleshy body, with eight arms, beset with numerous warts or suckers. They inhabit various seas, and in hot climates some of them grow to a prodigious size. They are armed with a dreadful apparatus as holders with suckers, by which they fasten upon, and convey prey to the mouth. They have also the power of squirting out a black, or brownish-black fluid, resembling ink, and employed as an ingredient in the composition of Indian ink; the black, or brownish hue, depending upon the colour employed. The bone in the back, which, we believe, is shed annually, is converted into pounce. The anatomy of this animal is highly singular. The eggs are remarkably large, and appear phosphoric, or fiery, in a high degree. The eggs are deposited upon sea-weeds, and exactly resemble a bunch of grapes. The instant the female deposits them they are white, but the male passing over them to impregnate them, they become black. The following are some of the species:

The *Octopus*, inhabiting the Mediterranean and Indian seas; in the latter it is of a vast size, its suckers sometimes being nine fathoms long. The Indians never venture out in their boats without hatchets to cut off the arms, should it attempt to fasten on them, and draw them under water. It is very phosphorescent in the dark.

The *Officinalis*, inhabits the ocean; eaten as food by the Italians.

The *Loligo*, or Calamary.

The *Tunicata*, body entirely inclosed in a black pellucid membrane; sometimes weighs one hundred and fifty

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pounds; convertible into a pleasant and palatable food. Inhabits the Pacific ocean.

Cyder. See CIDER.

Cynanche. See SORE-THROAT.

CYPER-GRASS, or *Cyperus*, a genus of plants consisting of seventy-six species, scattered over the globe. The following are the three chief species.

The *Rotundus*, a native of India; the leaves are green and resemble those of the leek or onion. The odour is fragrant.

The *Longus*, or English galangal. This is the common cyperus of the dispensaries, but a less pleasant aromatic than the last. The roots of both plants are used, on account of their fragrance, by perfumers and glovers.

The *Papyrus*, grows in the lakes of Ethiopia and Egypt; and is celebrated in ancient history as having furnished from its leaves the paper of early times. It was also employed for cordage, and other purposes.

The *Esculentus*, Eatable cyperus, or earth-almonds, a native of Italy and the south of France.

The roots of the *longus* have been

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occasionally used as a stomachic, but are of little importance.

CYPRESS, or *Cupressus*, a genus of trees containing seven species, of which the following are the chief.

The *Sempervirens*, or Evergreen cyprus, a native of Asia and the East Indies. Its wood is said to be an excellent preservative against worms and putrefaction; hence used by the Greeks as coffins, and by the Egyptians as mummy chests.

The *Thyoides*, Evergreen, American or White Cypress, a native of Canada; rising twenty or thirty feet high, ornamented with flat evergreen leaves.

The *Disticha*, or Desiduous American Cypress, with an erect trunk of large bore; grows fifty or sixty feet high, with small spreading deciduous leaves.

All these species may be raised from seeds, or propagated by cuttings. The seedlings make the most elegant plants. The season for sowing is March: the soil should be common light earth, placed in pots or tubs, plunged into a moderate hot-bed. In this way they will be fit to remove into nursery rows in about twelve months.

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DAF

DAB, or *Pleuronectes limanda*, a species of flat fish. See FLAT FISH.

DABCHICK, Didapper, or *Colymbus minor*, a small water fowl.

DACE, or *Cyprinus lenciscus*, a fresh-water fish. See CARP.

DAFFODIL, or *Narcissus pseudo-narcissus*, Asphodel, or King's spear, a species of *Narcissus*. See NARCISSUS.

DAFFY'S ELIXIR, a well known quack medicine, of considerable use as a warm stimulant purgative. It is made thus: take of senna ten ounces; of jalap-root, aniseeds, caraway seeds, and cori-

DAF

ander seeds, of each bruised four ounces; of rectified spirit of wine six pints and a half; of water six pints. Digest all the ingredients in the spirit of wine and water, (previously mixed,) for at least fourteen days, in a vessel closely stoppered, taking care to stir them well once or twice a day. Then pour off the clear tincture, and press out the remainder by placing the ingredients in a strong cloth, or hair bag, in a screw press. When the fæces of the expressed tincture have subsided, add the clear part to the former previously poured off.

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If a person making this elixir possesses the convenience of a still, the following additional process will improve the medicine. Let the expressed ingredients be put into the still, with a sufficient quantity of water to keep them from burning. Put the head of the still on, but not lute it till it is just about to boil: for in order to prevent the ingredients from burning, it will be necessary to stir them well from the bottom of the still several times, and particularly just before the distillation is about to commence. Then lute the head, and draw off one quart of liquid, to which add half a pound of treacle, and half a pint of rectified spirit of wine. Lastly, mix these with the tincture previously obtained, and keep the whole in a vessel well stopped.

This elixir, although never received into any of the dispensatories, has been long in use by some classes of society, as a cordial purgative, in doses of from half an ounce, to one ounce and a half, in colic and other flatulencies; and, where no inflammation is present, it is frequently of service. The virtues attributed to it in curing children's distempers, scurvy, gout, &c. it does not possess.

It is also one of the most useful medicines for curing the windy gripes in horses; the dose for this purpose is half a pint.

DAIRY-HOUSE, a place appropriated to the management of milk, butter, cheese, &c. A dairy ought to be so situated, that the windows or lattices may never front the south, south-east, or south-west: and it should at all times be kept in the cleanest and neatest order. Lattices are also far preferable to glazed lights, as they admit a free circulation of air. During the summer they cannot be kept too cool, they ought therefore to be erected if possible near a cold spring, or running water; and where it may be practicable to conduct a small stream of water through the premises, it will much contribute to the convenience and utility of the place.

For the utensils and other things re-

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lating to the dairy, see **BUTTER**, **CHEESE**, **MILK**, &c.

DAISY, or *Bellis*, a genus of plants consisting of three species: the *Perennis* one-flowered, found in our own pastures; the *Sylvestris*, a native of Italy; and the *Annua*, with a stem somewhat leafy, found in France, Spain, and Sicily.

The garden daisy is only a variety of the *perennis*, or common daisy. It is propagated by sowing the seeds, or parting the roots in Autumn; and should be planted in a shady border, in a loamy soil. It requires no kind of culture, but to be kept clean from weeds. The *annua* is thereby preserved in our botanic gardens merely for diversity.

Daisy, the *ox-eye*. See **CHRYSANTHEMUM**.

DALBY'S CARMINATIVE, a quack medicine, used chiefly, as its name imports, for the expulsion of wind. It is made thus: take of carbonate of magnesia six drachms; of ipecacuanha in powder seventy-two grains; of syrup of white poppies four ounces by weight; of syrup of saffron half an ounce; of oil of caraway seeds, of tincture of soot, and tincture of opium, of each one fluidrachm; of oil of peppermint six drops; of peppermint water ten fluidounces. Rub all the ingredients, except the last, well together, then add gradually the peppermint water, and keep it in a bottle well stopped, which should be well shaken before the contents are poured out for use.

Dalby's Carminative, as will be seen by the ingredients which enter into its composition, is a powerful medicine, and one which requires caution and discrimination in its administration. It is, we fear, too often given to children for windy and other complaints of the bowels; sometimes, we doubt not, with good effect. For very young children, the dose may be from 10 to 15 drops, or even less. For a child of a year old, a tea-spoonful may be given; to a child of seven years old, three tea spoonfuls. For adults, the dose is from one to two fluidounces, in diarrhoea and dysenteric complaints. We think, however, that

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many more elegant, and perhaps equally useful medicines may be prescribed. See **DIARRHŒA**.

Damask Rose. See **ROSE**.

Dame-wort. See **ROCKET**.

DAMP, or **DAMPNESS** in linen, clothes, dwelling houses, &c. cannot be too much guarded against. Dampness appears to be one of the worst forms in which cold can be applied to the human body; hence the frequent diseases arising from damp linen, damp beds, damp houses, flat and damp countries, &c.

Damson. See **PLUM**.

DANCING has been defined an agreeable motion of the body, adjusted by art to the measures or tune of instruments, or the voice; and where dancing is nothing more than this, continued but for a short period, and performed at no unseasonable hour, and more particularly if it be in the open air, and in the summer, we see no objection to its use as an agreeable variety of exercise for both sexes. But long and continued dancing in crowded and heated rooms, is at all times unquestionably mischievous, and should be avoided. Many of the elegant females of our ball-rooms have fallen victims to their passion for this nocturnal stimulant. Our watering places, Clifton, and the Bristol Hot-wells, bear melancholy witness of the rapid strides of **PULMONARY CONSUMPTION**, whose insidious attacks on the constitution are too often first made in the heated atmosphere, and by the excessive exercise of the **BALL-ROOM**.

DANDELION, or *Leontodon*, a genus of plants containing five species, natives of Europe; the two following are common to our own country.

The *Taraxacum*, having a yellow flower well known in our pastures, and from its possessing diuretic qualities, has obtained in France, as well as this country, the name of *Pissenlit*. It is aperient as well as diuretic, and has been occasionally used as a remedy in jaundice, dropsy, pulmonic tubercles, hepatic obstructions, derangement of the stomach, and some cutaneous dis-

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eases. It may be given in the form of extract, which may be made by pouring on the fresh bruised roots, one gallon of boiling water, in which they should macerate for twenty-four hours, then it should be boiled down to four pints, the hot liquor strained, and afterwards evaporated to a proper consistence; the dose of the extract is from ten grains to one drachm, with the addition of a few grains of supertartate of potash. Or an *Infusion* may be made by boiling two drachms of the sliced root in a quart of water to a pint; to which, when strained, should be added three drachms of supertartrate of potash: two drachms of this mixture may be given for a dose three or four times a day.

The *Palustris*, common to our marshes and wet moors.

DANDRIF, or *Pityriasis*, a complaint affecting the heads of children, and consists in irregular patches, or small thin scales arising on the surface of the skin like bran, which repeatedly form and separate, but never collect into crusts, nor are attended with inflammation. The best remedy for this disease is cleanliness: a frequent ablution with warm soap and water, or warm water alone.

There is another species of Dandriff affecting chiefly the arms, breast, and abdomen: it is diffused very irregularly, and being of a different colour from the skin, has a singularly chequered appearance. Although not merely a cuticular disease, it is not attended with any internal disorder, nor with any troublesome symptoms, except a little itching in getting into bed, after warm exercise, or after drinking warm liquors. It is not limited to age or sex, and it continues with some persons for many years. It is supposed to be occasioned by some particular kind of food, such as mushrooms, or fruit in too great quantity. Flannel worn next the skin will sometimes aggravate the complaint; in such case it should be left off. Regular and moderate living is perhaps the best remedy.

DARNEL, or *Eolium*, a genus of

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plants consisting of five species : three common to our own fields : one a native of Jamaica, and one of Malabar. The following are chiefly deserving notice.

The *Perenne*, Rye-grass, or red darnel, grows freely in chalky lands, and dry pastures. It makes excellent hay, in soils of this description ; and is of peculiar advantage in consequence of its becoming ripe for the scythe before any other grass. The goat alone of all domesticated animals seems to have an aversion to it.

The *Temulentum*, or White darnel. The seeds of this species are often malted with barley to produce intoxication in the ale, or strong beer, brewed from it.

Date. See PALM-TREE.

Daw. See CROW.

DAY, more particularly in domestic economy, and the labours of the field, signifies that space of time during which it continues to be light.

Upon the great effect which light has upon the animal functions of the human body, it is scarcely necessary to remark ; but the fact should teach us that the most proper time for the exertion of all our faculties, is during the continuance of the light of the day ; and hence early rising, and early going to rest, must be a necessary consequence of exertion during the *day*. Some regulation is however evidently necessary in our climate in this respect : the day in summer being more than twice the length which it is in winter, exertion for sixteen hours is neither desirable, nor is it conducive to health ; nor is it in the winter time advisable to limit our exertion only for the few hours which the sun remains above the horizon. Six or at most eight hours of active labour every day, are more than sufficient for the purposes of health ; six or eight more for mental employment and food, and eight for the repose of the night, is perhaps as good a division both of the day and night, for most seasons of the year, as can be adopted. But from our various habits and employments these divisions cannot be often adopted : he however who desires health and long

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life, will rarely obtain them by the slothful practice of lying late in bed in a morning. See BED-TIME, BREAK-FAST, DINNER, and SUPPER.

DEAD NETTLE, ARCHANGEL, or *Lamium*, a genus of plants consisting of thirteen species, mostly indigenous to the south of Europe ; three common to our own fields and wastes, as follow :

The *Album*, or white Archangel ;—the *Purpureum*, or red Archangel, the young leaves of which are boiled and eaten as spinach ; and the *Amplexicaule*, with a clasping stem.

Deadly Nightshade. See NIGHT-SHADE.

DEAFNESS, the state of a person who wants the sense of hearing ; or the disease of the ear which prevents its due reception of sounds.

Deafness sometimes arises from compression of the auditory nerve, from wounds or ulcers, from some collection of matter in the cavities of the inner ear, or from the auditory passage being stopped up, or impeded by hardened wax ; or from some foreign body getting into it. Deafness is very often the effect of old age, and is incident to many persons in the decline of life. Sometimes it originates in an original fault in the structure of the ear itself ; in such case it admits of no cure, and the person not only continues deaf but also dumb. See DUMBNESS.

Deafness, occasioned by wounds or ulcers of the ear, or by old age, is not easily removed. If it proceed from cold applied to the head, the patient must be careful to keep his head warm, especially in the night ; he should also take some gentle purges, keep his feet warm and dry, and bathe them in lukewarm water at bed time. If it proceed from hardened wax remaining in the ear, an ivory ear-pick should be used occasionally, and with great tenderness. In the deafness arising from hardened wax, we doubt the utility of dropping liquids into the ear ; but if a liquid be used, we think the best by far is oil of almonds. Of washing and syringing the ears also we have much doubt : but, however, if one remedy does not answer

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in this complaint, it is natural to attempt another : the following have been recommended. Common salt and water, in the proportion of one drachm of the former, to one ounce of the latter ; soap liniment one drachm, water three drachms, mixed together ; the gall of an eel mixed with spirit of wine : spirit of rosemary or lavender ; musk ; camphorated oil ; oil of almonds, and liquor of ammonia, in the proportion of three drachms of the former to one of the latter. The juice of onion dropped on cotton, and worn for some weeks. These remedies should be applied with great caution, and in small quantities at a time. They may sometimes do good, but not unfrequently harm. All tampering with the sense of hearing ought to be avoided. Issues, or setons, have sometimes been of service.

To prevent or to cure deafness, too much care cannot be taken in keeping the head, or at least the ears, warm, and all dampness and cold in the feet should be most carefully avoided.

DEAL, a well known wood, the production of the fir-tree, and of great utility for building and other purposes. The best deal is that which contains the greatest quantity of turpentine, usually called red deal ; the white, or yellow deal is neither so strong nor so lasting. See **FIR-TREE**, and **TIMBER**.

DEATH, that state of the body in which it no longer possesses the living principle.

The following are the most certain signs of death. Cessation of the pulse ; total cessation of breathing ; rigidity of the body, and inflexibility of the limbs ; relaxation of the lower jaw ; inability of the eye-balls to return to their sockets, when pressed by the finger ; dimness, faintness, and sinking of the cornea, or the uppermost horny coat of the eye ; foam in the cavity of the mouth ; blue spots of various sizes, and in different parts of the body ; a cadaverous smell ; insensibility to all external stimulants. All these symptoms, however, if individually considered, are far from being conclusive. They only af-

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ford a certain criterion of death when most, or all of them, concur at the same time. See **BURIAL PREMATURE** ; concerning which we would add here that, unless from its putrid state and the manifest unwholesomeness of keeping a dead body from interment, it is always most advisable to retain it in the coffin, but with the lid not nailed down, for a week after death ; and to cause it to be inspected, by some proper person, at least once every day. By such means, the actual presence of death might be most certainly known, and the survivors would consign their lost friend with much more satisfaction to the grave.

DEATH, apparent. See **COLD**, **DROWNING**, **SUSPENSION BY THE CHORD**, &c.

DEATH-WATCH, **TICK-WATCH**, or *Termes pulsatorium*, a species of the genus ant, inhabiting Europe and America, and found in our own country, in old wood, decayed furniture, &c. The female, to attract the male, beats like the ticking of a watch. The noise which this animal makes, was formerly held to be ominous, but since the causes of such extraordinary noises have been enquired into and known, it has ceased to be an object of either terror or alarm.

DEBILITY, that state of the body, or mind, more or less diseased, in which the living functions are weakened or impaired. Debility is very frequently caused by the undue and excessive action of stimulants, whether those stimulants be food and drink, affections of the mind, exercise, air, or medicines : the debility arising from such causes has been termed indirect. The debility arising from deficient food and drink, bad air, and an absence of the pleasurable affections of the mind, &c., has been termed direct. These distinctions, although acted upon in the advice or directions given in numerous parts of our work, do not appear to us necessary to be insisted upon here : principally because, except to the medical student, such distinctions would frequently not be discriminated. Debility, however, is not a disease merely, but an order of diseases.

Complaints partaking more or less of debility, are unquestionably more common, at least in cities, than they formerly were. One of the principal causes of debility in cities is, the *absence of muscular exercise in good and wholesome air*, sedentary employments; an indolent mode of life; night-watching; debauchery, whether in food, drink, or the passions; the excessive use of mercury; contagious diseases; improper and tight clothing; excessive stimulants, whether mental or corporeal: in a word, whatever has a tendency to excite the blood, or the nervous system, to undue, increased, and long-continued action, generally leads debility in its train. Nor are deficiency of food and drink, scanty clothing, excessive labour, bad air, sorrow, anxiety, and other depressing passions, less fertile in producing some complaint allied to this order of diseases.

In all diseases of debility, it is necessary that particular attention should be paid to DIET; without which it is scarcely possible to effect much permanent good. Indeed, it has been long ago observed, and can be scarcely repeated too often, that what enters the body by pounds and pints, is of much more importance than medicines, which are generally taken by scruples and grains; and, as the stomach suffers from debility, at least, in the first instance, more than any other part, for this reason it is, that in such diseases, the food which is taken ought to be that which will best suit it, and produce the least inconvenience, by flatulence, acidities, or other unpleasant attendants. We have, in various parts of our work, pointed out what that food should be, and therefore have no occasion to reiterate it here. See AGUE, ALIMENT, AMMONIA, APPETITE, ATROPHY, BATH-WATERS, BEEF TEA, DIET, DYSPEPSIA, HYPOCHONDRIASIS, OPIUM, PERUVIAN-BARK, &c.; and the various articles on the PASSIONS throughout our work.

DEBT, that which one man owes to another: particularly money. In a

commercial country it is scarcely possible to carry on business without being in debt; or, at least, it has become so much the custom to obtain credit, that much of the business done in Great Britain, is done by it. The domestic economist should guard strenuously against debts; they are inconvenient at all times, and often anticipate that income which ought to be disposable for other purposes.

Our laws have long awarded imprisonment as a punishment for debt; but they too often enable a fraudulent debtor to protract the payment of his just debts, and of a vindictive creditor, not only to harass and annoy, but to deprive of his liberty an honest debtor, and often, by such deprivation, take from him the only means which he possesses of satisfying his creditor. The laws, however, relative to the debtor and creditor are, at the present moment, in a very unsettled state. Surely it would be worthy the enlightened reign of George IV. to abolish imprisonment for debt, except under peculiar and aggravated circumstances of guilt, or embezzlement, which might be, and ought to be, proved before the debtor's liberty be taken away.

DECEIT, in morals, a fraudulent disposition of the human mind, evinced either in conduct or in words. He who practises deceit, may expect to be deceived himself: for, unfortunately, too many persons suppose, that to deceive the deceiver, is perfectly warrantable. To this, however, we cannot agree: and, notwithstanding a frank avowal of our opinions and our motives, often excites the hostility of the envious, the malignant, and the uninformed, yet, upon suitable occasions, silence is pusillanimity, and often implies acquiescence in conduct and opinions, to which every thing good is, of necessity, opposed: deceit, therefore, can never be justified. See CANDOUR.

DECIMALS, or DECIMAL FRACTIONS, are fractions whose denominator is always a 1, with some number of cyphers annexed, more or fewer, accord-

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ing .o the value of the fraction, the numerator of which, may be any number whatever. Decimals are expressed thus : ,5 ,25 ,75 ; these, if stated in vulgar fractions, would be either $\frac{5}{10}$ $\frac{25}{100}$ $\frac{75}{100}$ or which is the same thing, $\frac{1}{2}$ $\frac{1}{4}$ $\frac{3}{4}$; ,5 being one-half of ten is called, in decimals, five-tenths ; ,25 being one-fourth of one hundred, is called twenty-five one hundredths ; and ,75 being three-fourths of one hundred, is called seventy-five one hundredths. Every person ought to become acquainted with this science of fractions, without which, many things, otherwise very simple, must remain unknown. Thus, in the present work, the weights of the metals, the heights above the level of the sea, as stated under the article **BAROMETER**, &c., are given in decimals. The specific gravity of **BISMUTH**, for instance, is 9,8 (i.e.) nine times heavier than water, and eight-tenths more.

DECIPHERING, or Decyphering, the art of discovering the alphabet of a cypher, or of explaining a letter written in cyphers, or secret characters. This art has often engaged the attention of the curious ; and the statesman and the politician, have thought proper occasionally to employ it ; but as we hope the days of mystery and concealment are rapidly passing away, so we think that the study of such an art may be left to those who prefer the curious and the trifling, to common sense, and the welfare of their fellow-men.

DECOCTION, in the preparation of medicines, a boiling in water, for a longer or a shorter period. Decoction differs from infusion, in the latter being boiling water poured upon the ingredient ; whereas, in a decoction, the ingredient is boiled over the fire in the water. Decoction frequently extracts all the valuable qualities of both medicine and food. See **BEEF-TEA**, **BOILING**, **BARLEY-WATER**, &c.

DECOMPOSITION, in chemistry, the disunion, or separation of substances already joined. The art of decomposing bodies is one of the most ingenious and important in the whole range

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of chemical science. It is upon the decomposition of the atmosphere, metals, &c. that the present improved state of chemistry rests.

DEED, an instrument written on paper or parchment, which relates principally to the conveyance, or transfer of property, and the validity of which consists in the following essential particulars : Proper parties to contract with one another, and a proper subject to be contracted for—a good and sufficient consideration ; writing on parchment or paper duly stamped ; sufficient and legal words properly disposed ; reading (if it be desired) before execution ; by stat. Car. II. c. 3, sealing, in many cases, signing also ; and lastly delivery, which must be done either by the party himself, or by his attorney, lawfully authorised and expressed in the attestation. If any of these requisites be wanting, the deed is absolutely void from the beginning. Deeds are subject to stamp duties : those for the conveyance of lands, of mortgages, of settlements, &c., must now have stamps in proportion to the value of the property conveyed.

DEER, or *Cervus*, in zoology, a genus of quadrupeds, consisting of eleven species. The animals of this kind live in woods ; fight with the horns ; stamp with the fore-feet ; and have no gall-bladder ; flesh tender and wholesome.

The *Pigargus*, or Tailless Roe, inhabits the woody mountains of Herkania, Russia, and Siberia ; becomes hairy in winter ; larger than the common roe.

The *Alces*, Elk, or Moose, with palmate horns, sometimes thirty-two inches long ; inhabits Europe, America, Asia, and Japan. Size of a horse ; gentle except when teased by the gad-fly ; feeds on twigs, branches of trees, and marsh plants ; goes on its hoofs at the rate of fifty miles a day ; skin hard, almost able to resist a musket bullet ; flesh good ; greatest height seventeen hands ; greatest weight twelve hundred and thirty pounds. Another variety, now no longer known to be in exist-

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ence, but the horns frequently dug out of the peat-bogs of Ireland, larger than the common elk.

The *Elephas*, or Stag; of this there are several varieties; one of China, the size of a common dog.

All the varieties are, in the body, of a tawney-brown above, beneath whitish; rarely all white. The branches of the horns increase in number every year. Inhabits Europe, North America, and Asia, in herds of many females with their young, under the guidance of one male; swims well; gentle except during the season of the gad-fly; fights furiously for the females which are seldom horned; female gravid eight months; brings one, rarely two young; drops its horns in February or March, and recovers them fully in July; of elegant shape, three feet and a half high.

The *Dama*, or Fallow deer, the common Buck and Doe of our parks, is considerably smaller than the stag, and of a brownish bay colour; the principal mark of distinction between this species and the stag is the form of the horns, which, as in the stag, are peculiar to the male, and are palmated, or divided into processes, which are continued to a considerable distance down the outside of each horn. In its general form, it greatly resembles the stag, having the same elegance of aspect, with a more gentle disposition. Found in various parts of Europe and Africa.

The *Virginianus*, or Virginian deer, is the size of the fallow deer; it is of a light ash-colour brown; horns slender, with numerous branches: found in vast herds in the northern parts of America; flesh good; skin useful.

The *Axis*, or Spotted Axis, is one of the most beautiful of the tribe, and is commonly known by the name of *Ganges stag*, the size of fallow-deer. Found in India. Now occasionally seen in parks in Europe. Two other varieties: the Great and Middle Axis.

The *Tarandus*, or Rein-deer, consists of several varieties; in all of them the body is brown above, gradually growing whiter with age; smell exquisite; the size of common deer; flesh

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good when salted. Used in Lapland, and other northern countries, for drawing sledges upon the snow, over which it passes with astonishing swiftness.

The *Porcinus*, or Porcine-deer, with a brown body above, ash-coloured beneath. Inhabits India; three feet and a half long, two and a half high. A variety found at the Cape, whose body is yellowish with white spots.

The *Mexicanus*, or Mexican deer, with a tawny body, inhabits New Spain, Guinea, and Brazil; flesh inferior to venison.

The *Capreolus*, or Roe, with horns branched round, body brown tawny; another variety white; inhabits the less mountainous woods of Europe and Asia in small troops; never grows fat; flesh very delicate; gravid from twenty to twenty-two weeks; brings twins; female without horns; two feet and a half high; a variety without tails.

The *Muntjac*, or Rib-faced deer, inhabits Java and Ceylon in small tribes; less than the roe; flesh good.

Deer skins are well known for their softness, pliancy, and strength, when made into leather: that called *buckskin*, used chiefly for small-clothes, is extremely durable.

The flesh of the fallow-deer, commonly called *venison*, is a nutritious food, but, as it is too often kept till it is in a state of putrescence, it ought not then to be eaten.

DEFORMITY is immediately opposed to beauty, and denotes the want of that uniformity, symmetry, and variety necessary to constitute beauty.

Deformity of the body is sometimes produced by neglect, or the improper clothing of infants. Parents and nurses cannot be, therefore, too careful that children are properly clad, and that their clothing shall permit them the free use of their limbs, and, indeed, of every part of the body.

Personal deformity, when fixed and irremediable, has frequently been of incalculable advantage to the individual, by compelling the attention to that more noble part, the mind. And certain it is, that its opposite, beauty, has

done more to upset the understanding and conduct of the female in particular, than any other personal attraction whatever. A powerful conviction of the inutility, not to say danger, of mere personal charms, is the best antidote for the pride of beauty.

DELIRIUM, a symptom attendant on many fevers, consisting in the patient's acting or talking unreasonably. It is to be carefully distinguished from alienation of mind, without fever. Delirium always implies a great disturbance of the functions, and is usually a symptom indicating, more or less, danger.

DEMULCENTS are medicines thus called, which possess a power of diminishing the effects of certain stimulants on the sensible solids of the body. Starch, gum Arabic, olive oil, and water, are demulcents.

DENTIFRICE, a medicine to clean the teeth. See **TOOTH-POWDER**.

DENTITION, the breeding or cutting of the teeth. See **TEETHING**, and **TEETH**.

DEOBSTRUENTS, medicines which are given with a view of removing obstructions.

Derbyshire Spar. See **FLUOR SPAR**.

DESIRE, an uneasy sensation excited in the mind, by the view or contemplation of any thing which is not in our possession, which we are solicitous to obtain, and of which the attainment appears at least possible. The passion of desire is, perhaps, one of the most intense which actuates the human mind, and one over which it behoves us to be constantly on our guard, as in this our bodily, as well as mental functions, are often both intimately concerned. A wise man will study to contract his wants, and limit his desires: experience teaches us that the acquisition of any object, even long and much desired, affords, by no means, the gratification or the happiness which the imagination had previously portrayed. See **CONTENT**.

DESPAIR, the total absence of all hope; a state of mind, certainly, greatly to be lamented and deplored. As, how-

ever, the situations or conjunctures in human life are comparatively few which admit of no hope, so he will act most wisely, who, in every event, looks forward to the possibility of some intervention or occurrence to prevent the introduction of despair. Human life is indeed chequered with both good and evil; and the sufferings of many are great and terrible, yet he who has watched the progress of mankind, becomes convinced that, as even the most elevated situations and prosperity are not exempt from a portion of misery, so, on the other hand, the most abject and humiliating afford lessons of consolation and of hope. He who despairs has perhaps calculated too highly on the world; he who still hopes with tranquillity of mind, demonstrates the most philosophy and wisdom; and such a state of mind it is the duty of all rational beings to cultivate, and endeavour to obtain.

DEW, the water which is exhaled from the earth by the warmth of the day, or the immediate rays of the sun, and in the evening and during the night, when the heat is withdrawn, descends again to the earth and collects in drops, more or less large, on the grass, leaves, flowers, &c. The dew is more copious in the spring and autumn, in consequence of the difference between the temperature of the day and night being the greatest; and more so, particularly, in the spring, when the earth contains a great quantity of moisture. Dew does not appear to be different in its quality from rain-water.

Dew-berry. See **BRAMBLE**.

DIABETES, a disease consisting in an immoderate flow of urine. This complaint first shews itself by a dryness of the mouth, thirst, white, frothy spittle, and the urine somewhat in larger quantity than usual. The thirst continues to increase by degrees, and the patient gradually loses the power of retaining his urine for any length of time. So intense has been the thirst in some cases of this kind, that ten or twelve pints a day have been drunk without the patient's being satisfied. It is remarkable, that though the patient

drinks much, the quantity of urine always exceeds what is drunk. The most remarkable thing, however, in this disease is, that the urine appears to be divested of its usual animal matter, containing a substance of a sweet taste, having the properties of sugar, and its specific gravity is considerably increased above the healthy standard. The causes of this disease are not certainly known. It is very difficult of cure.

Dr. ROLLO, who published a treatise on this complaint, some years since, thinks that the vegetable matter taken into the stomach, does not, from some defect in this organ, undergo a sufficient change to form proper chyle; that, in consequence of this, much saccharine matter is evolved, which, when carried into the circulation, proves a general stimulus, producing head-achs, and quickness of pulse, but that it acts more remarkably on the kidneys, occasioning a constant and copious secretion of urine. He therefore recommends attention to the state of the stomach; to this end he advises a complete diet of *Animal food*, and the use of such medicines as shall diminish its power for the formation or secretion of saccharine matter. The remedies which he principally recommends are emetics, sulphuret of potash, lime-water, ammonia, and vegetable narcotics. But the principal dependence is to be placed on a *total abstinence from all vegetable food*. By a regular perseverance in this plan, several patients experienced a complete cure.

DIABETES, in HORSES, or excessive staling, is attended with great thirst, and often with some degree of fever; the urine is evacuated in large quantities at a time, of a pale colour, and transparent, nearly resembling water. It appears to be generally caused by bad oats and bad hay.

On the first discovery of the disease, give the following ball at morning and night: alum, two drachms; bole armenic, Peruvian bark, of each half an ounce; of ginger two drachms; treacle enough to make a ball.

Mashes should be given two or three

times a day, and a moderate quantity of lime-water should be administered for drink; walking exercise, and warm clothing, are necessary, and the body should be well rubbed, particularly the legs. The following balls may also be given, omitting, of course, those previously mentioned: Peruvian bark, twelve ounces; grains of paradise two ounces; gentian root three ounces; honey sufficient to form sixteen balls; one to be given every morning.

Copious bleeding, joined with Dr. Rollo's plan of giving nothing but animal food, has been successful. Besides these remedies, other tonics and astringents are occasionally employed, such as oak-bark, catechu, muriate of iron, sulphate of zinc, &c. It has not been ascertained whether the water in this disease be sweet, as in the human subject. But it is advisable to restrain the horse, as much as possible, from vegetable, and give him much animal food; either as broths, or flesh made up into balls with a small quantity of flour.

DIAMOND, a precious stone of most costly value, found in the East Indies and South America. The largest known diamond is supposed to be that mentioned by Tavernier, in the possession of the Great Mogul, which is about half the size of a hen's egg. Among the crown jewels of Russia is a magnificent diamond, weighing 195 carats. It is the size of a small pigeon's egg, and was formerly the eye of a Brahminical idol, whence it was purloined by a French soldier. It was ultimately purchased by the empress Catharine for £90,000 in ready money, and an annuity of £4000. But perhaps the most perfect and beautiful diamond hitherto known, is that brought from India by a gentleman of the name of Pitt, who sold it to the duke of Orleans for £100,000, by whom it was placed among the crown jewels of France. It weighs rather more than 136 carats.

The fracture of the diamond is foliated; it is brittle and very hard; its specific gravity is 3.5. The diamond has been found nearly of all colours; those which are colourless are most es-

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teemed; then those of a decided red blue, or green tint. Black diamonds are extremely rare: those slightly brown, or tinged only with other colours, are least valuable.

The uses of the diamond in cutting glass are well known. But the most extraordinary property of this hard and brilliant substance is, that it may be completely burnt or decomposed by heat; when the diamond is burnt in pure oxygen, it is attended with the same results as the combustion of pure charcoal, hence the inevitable inference that charcoal and the diamond are similar substances in their chemical nature, differing only in mechanical texture. See CARBON, and CHARCOAL.

DIAPENTE, a medicine well known to Farriers. It is made thus: Take of bay-berries six ounces; of gentian root eight ounces; of birthwort seven ounces; of ivory shavings seven ounces; of almond cake seven ounces. Let each article be separately powdered; afterwards mix the whole together.

Diapente is a medicine, although frequently given to cattle, of no great importance; it may be occasionally useful in loss of appetite and complaints of the bowels; but to be effectual it ought to be given in pretty large doses; four, six, or even eight ounces at a dose. Myrrh, and also capsicum, are sometimes added to it with advantage.

DIAPHORETICS, medicines, which, being taken internally, increase the discharge by the skin, commonly called sweating.

DIAPHRAGM, or **MIDRIF**, a muscular membrane which divides the cavity of the thorax or chest, from that of the abdomen. The use of this membrane is very considerable: it is the principal agent in respiration; and, during its continuance, the cavity of the thorax is alternately enlarged and diminished, by the lowering and rising of the diaphragm, by which the air is received into and expelled from the lungs, and thus the important function of respiration is performed.

DIARRHŒA, a purging or looseness arising from various causes. What

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has been called the *mucous* diarrhœa is most common; besides the matters usually excreted, it is attended with a copious discharge of the mucus of the intestines, with more or less pain, while the patient daily becomes weaker, but without any fever. Persons of all ages are liable to it.

In Diarrhœa, however, it should be remembered, that, in many cases, it is an effort of nature to throw off something offensive in the constitution, and therefore, it should not be rashly or injudiciously stopped. Diarrhœa may be often traced to the use of weak, vegetable, and watery food, without a proper proportion of the animal kind; in such cases an alteration in the diet, by a total abstinence, for a few days, or even weeks, from all vegetable aliment, and fermented liquors, will often effect a cure; the drink in such cases should be toast and water, or weak spirit and water; or a glass or two of port wine mulled, with cloves, will be sometimes found, as a variety, very useful. Beef-tea will, in this disease, be of great advantage; it may be taken often, with common, or cayenne pepper; if bread be soaked in it, it should be previously toasted. Under the heads ALIMENT, APETITE, and DYSPEPSIA, will be found many observations deserving of attention in this complaint.

Should, however, the disease not subside in the course of a few days from its commencement, and the patient get evidently weaker, recourse must be had to medicine: the following will, in general, cure most diarrhœas: Take of aromatic confection two drachms; of tincture of opium one fluidrachm; of compound spirit of horse-radish one ounce; of cinnamon-water six ounces: mix the whole together, of which let two table-spoonfuls be taken twice a day. Where it is sometimes more particularly desirable not so immediately to check the diarrhœa, the omission of the tincture of opium, and the addition of one scruple of carbonate of ammonia to the mixture, may be advantageously made.

In slight cases, gentle doses of rhu-

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barb will answer the purpose; and in others, a decoction of logwood has often been effectual. See **LOGWOOD**: see also **DYSENTERY**.

In obstinate cases it will be necessary to adopt a regular course of diet, and of medicine; when it will be also most advisable to apply to the physician.

DIARRHŒA, or **SCOURING OF HORSES**, often happens from eating new hay or oats, and is then of little consequence; but should it continue, let them drink freely of gruel made of wheat flower, and, if this fail, give the following ball: Take of caraway seeds recently powdered, six drachms; of catechu in powder, two drachms; of ginger root in powder, one drachm; of opium in powder, half a drachm; treacle enough to form a ball. This may be repeated the following day if necessary, the horse continuing to drink the gruel of wheat-flour or arrow-root.

If there be reason to suspect the complaint arises from worms, or other hurtful matter, lodged in the intestines, give, in the first place, a ball composed of two drachms of aloes, three drachms of rhubarb, and three of soap.

This complaint sometimes accompanies other diseases, either of the liver or some internal part, and is then attended with loss of flesh, want of appetite, and debility; in such cases it generally proves fatal.

Some horses of delicate constitutions are attacked with diarrhœa whenever they are put to any considerable work; such horses should take a cordial ball, with the addition of two or three drachms of catechu, before they go out, and as soon as they return from either hunting or exercise.

DIBBLE, a simple, but useful implement in gardening, sometimes called a planting stick; it is about eight inches long, commonly shod at the point with iron, to enable it to enter more easily the earth, and it has an arm, or handle, standing at right angles with the point, by which it may be easily and expeditiously used. Other forms of dibbles are also occasionally in use.

Beans and peas are frequently dibbled

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with advantage; wheat has also been occasionally dibbled, but it is expensive; and the practice is now rather on the decline.

Didapper. See **DAB-CHICK**, and **DIVER**.

DIET, that part of medicine which consists in the taking of suitable food and drink, either to prevent or to remove disease.

The necessity of attending to diet, although often insisted upon by the physician, has not been felt by mankind with sufficient force to excite that inquiry and attention to the subject, so as to enable those who are not professionally students of medicine, to guard against, or to obviate many diseases which a knowledge of the different qualities of food and drink will frequently enable us to do. This is, however, not perhaps the fault of the public, but of our teachers: mystery has too often stalked beside the professor; and where his knowledge has failed, this convenient personage has been often called in to his aid.

The diet must of course be varied according to the age and constitution of the patient, and also of the disease. Thus a person of a robust constitution, who is attacked with catarrh, should immediately abstain from all fermented liquors, wines, and spirits, abridge himself of his usual quantity of food, and drink nothing but water, or water acidulated with lemon juice. For, independently of catarrh itself being an inflammatory disease, it frequently precedes that more alarming complaint, inflammation of the lungs; all stimulating food and drink should therefore be most carefully avoided. Indeed, abstinence from food and drink alone, water excepted, has often relieved, or even removed diseases of this kind. •

In the ague, and many other diseases of debility, an increase of the quantity, or at least in the goodness of the food and drink, is of primary importance. Here spirit and water, wine, beef-tea, and other animal food according to circumstances, will prove extremely salutary; particularly if the patient has not

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been previously in the habit of taking such stimulants.

Young persons require different diet from the old, or even the middle aged. Water for the young, will, in general, be found the best drink, and a large proportion of vegetable over the animal part of the food which is eaten ought always to prevail.

Valetudinarians and the dyspeptic will find it best to avoid all heavy meals; to eat often, and to guard studiously against food and drink which ferment in the stomach.

The seasons of the year in regard to food, are to be in some degree attended to: it will be found that many vegetables which are in *season*, and agreeable in the summer, are quite unsuitable at other periods of the year.

Persons whose employments are sedentary, should always eat sparingly, whereas those who use much bodily labour, or other muscular exercise, can afford to take more large and substantial meals.

The diet of children ought to be of the most simple kind; fat animal food, and much butter, should be studiously avoided; their drink, unless under peculiar circumstances, should be nothing but water.

When there is a squeamishness in the appetite, with a disinclination for solid food, beef-tea, arrow-root, tapioca, sago, and such articles, will generally afford a variety of diet both agreeable and nutritious. See ALIMENT, APPETITE, DEBILITY, DIGESTION, DYSPEPSIA, FOOD, &c.

It is scarcely necessary to add, that persons liable to certain diseases, ought to avoid those kinds of food or drink which are known to be injurious. The dyspeptic, for instance, should not eat new bread, pan-cakes, baked pastry, nor flatulent vegetables, nor drink English wines, or malt liquors. The gouty should avoid excess of every kind, particularly in wines, and high-seasoned food; and those who are troubled with gravel, should avoid astringent food, and hard water.

DIFFERENCE OF OPINION, has

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often produced more mischief among mankind than even differences or collision of the grossest self interest. Although this is not difficult to be accounted for, it is greatly to be deplored. Persons possessing difference of opinion, and particularly religious or political difference, should constantly remember that in general no man is the arbiter or director of his own opinions; that opinions are often received early, and retained throughout the whole of life, with so thorough a conviction of their truth, that to the mind, unaccustomed to question such impressions, it appears heresy, and even blasphemy, to doubt them; when, to the cool and dispassionate mind, such opinions appear, and most probably are, absolutely erroneous, or even totally false. In general, opposition to opinions will be found to be violent and pertinacious, in proportion to the small stock of intelligence by which it is supported. True wisdom disclaims, and is an enemy to all violence: no wise or benevolent mind ought therefore to feel anger at difference of opinion. On the contrary, the truly benevolent, and the sincere well wisher to the happiness of his species, will adopt every method which kindness and conciliation can suggest to soften such differences, and to allay the animosities which such pertinacities too often produce.

DIGESTER, a utensil in which a heat considerably greater than boiling can be applied, and by which many substances may be dissolved, that would remain otherwise by mere boiling unaffected. Great expectations have been formed by the use of this vessel as a culinary utensil, but although convenient upon some occasions, we do not think it is adapted to general use, or indeed to the preparing of animal food with that advantage which those who recommend it seem to believe.

DIGESTION is that process by which the food of animals is converted into chyle, and which, in conjunction with respiration, tends to the production of the blood, and, consequently, to the nourishment of the body.

DIGESTION

In man, the food being duly masticated in the mouth, and blended with a considerable portion of saliva, is propelled into the stomach, where it soon undergoes a remarkable change, and in the course of a few hours is converted into an apparently homogeneous pulpy mass, which has been termed *chyme*, and which has little or no resemblance to the original food. This very curious change is only referable to the operation of a secretion peculiar to certain glands of the stomach, which has been termed *gastric juice*; all that is known respecting this fluid, is, that it has very energetic solvent powers, in regard to a great number of animal and vegetable substances; the remarkable property of living substances to resist its action, is curiously illustrated by the circumstance, that the stomach itself after death is occasionally eaten into holes by its action; it instantly coagulates all albuminous substances, and afterwards softens and dissolves the coagulum. There are some substances, however, which remarkably resist its action, such as the husk of grain, and of many seeds, which, if not previously broken by mastication or otherwise, pass through the stomach and bowels nearly unaltered. Experiments upon this fluid are much at variance: it has been described as glairy and of a saline taste; and sometimes is said to be acid, and sometimes bitter; but the cause of its singularly solvent energies is still unknown.

From some curious physiological researches of Sir EVERARD HOME, there is reason for concluding that a considerable portion of the liquid which is taken into the stomach, is copiously and rapidly removed by absorbent vessels belonging principally to the left portion of the stomach, and that during digestion there is an imperfect division of the stomach into two cavities, by the contraction of the muscular fibres about its centre; the liquids so absorbed, it has been also shewn, very soon reach the kidneys, and pass off by urine; but by what means these liquids arrive at the kidneys is not even now with certainty known. The truth, however, of

such absorption of liquids in the stomach is amply confirmed by even the most casual observer of the effect of fluids, more immediately diuretic.

The chyme passes from the stomach into the small intestines, where it soon changes considerably its appearance: it becomes blended with bile, and is separated into two portions, one of which is white as milk, and termed *chyle*; the other passes on to the larger intestines, and is ultimately voided as excrementitious. The chyle is absorbed by the *lacteals*, which terminate in the trunk or tube called the *thoracic duct*; it is there mixed with variable proportions of lymph, and mixed with the blood in the manner stated in the article ANATOMY. There can be little doubt that the bile performs an important part in the change which the chyme undergoes in the small intestines; and its importance is demonstrated by the emaciation which attends its deficiency, and by the disordered state of the bowels that accompanies its imperfect secretion.

From this statement, it appears that the principal use of the stomach, is to change the food into chyme, that when the chyme is propelled into the duodenum, it is then converted into chyle, which is always of the same nature, but not always of the same proportion to the quantity of food.

The *great sensibility* of the stomach forms, however, an important feature in the process of digestion, and is operated upon in various ways, by the passions of the mind, as well as by aliment, medicines, and other bodies immediately received into it, or when occasionally applied to the region of the stomach externally. In many instances it is clear that medicines, wines, and ardent spirits, operate so instantaneously either in elevating the spirits, increasing the circulation of the blood, or in exciting the stomach to eject its contents, and some poisons in producing immediate death, that the nervous system is at once acted upon, there not being sufficient time for any secretion from the stomach to be conveyed into the blood.

Upon this great sensibility, and the

sudden effect which liquids possessing a greater or less proportion of alcohol, have upon the stomach, and through it upon the whole system, and the brain in particular, the unfortunate propensity to drunkenness chiefly depends: for we presume that few persons would voluntarily drink to excess, if it were not accompanied with pleasurable sensations, and a comparative annihilation of thought, or at least of all painful thought for a short period. It would be well if the consequent uneasiness both of body and mind, which is sure to take place, always operated as a beacon. The more often such excesses are committed, the more certainly painful and irretrievable are their effects.

Connected with the sensibility of the stomach is its muscular action. How much this muscular action contributes to the digestive process, we have no means of ascertaining. But it appears tolerably certain, that whenever it is not exerted with sufficient energy, symptoms of indigestion appear: in other words, the food is not propelled out of the stomach, nor perhaps upper intestines, before fermentation or other unpleasant consequences take place. Sometimes the muscular action is in excess; that is, the food is propelled out of the stomach before it has undergone the proper digestive process, and hence those diseases which are accompanied with strong, and almost continued sensations of hunger.

Such is the important process of digestion. And when we consider the very great variety of aliment which enters the human stomach, a variety much greater than that of we believe any other animal, the wonder perhaps will be, not that the stomach is so often affected with disease and disturbance, as that it is not more frequently diseased than we commonly find it. See ALIMENT, APPETITE, DYSPEPSIA, &c.

Some of our modern physiologists recommend rest, or lying down for an hour or two after dinner, in order that the process of digestion may be more effectually performed. Excessive ex-

ercise after a meal should certainly be avoided; but what is the fact relative to a large portion of mankind—the labouring classes; they go constantly to their labour within a very short period after their meals, and as far as we have had an opportunity of observing, suffer no inconvenience from it whatever: the sole secret perhaps lies in the plainness of their food. The habit of lying down or sleeping after dinner we consider a bad one, and should be avoided: such habits often produce bad and sleepless nights.

DIGITALIS, the term usually given by the scientific to the plant commonly called Fox-glove, which see.

DILL, or *Anethum*, in botany, a genus of plants consisting of three species, as follow:

The *Gracelens*, or Common Dill, is an annual plant, a native of Spain, and is cultivated in this country. The seeds of which are the parts used medicinally, are about the length of a caraway seed, but broader and flatter; they have, when dried, an aromatic sweetish odour, and a warm, pungent, but not unpleasant taste. They yield their flavour to boiling water by infusion; and are carminative and stomachic; they are rarely employed, except in hiccough and the flatulent colic of infants. The dose of the powdered seeds is from fifteen grains to one drachm. A *water of Dill seed* is ordered by the London College, which is made by pouring sufficient water on one pound of the brused seeds to prevent their burning during the distillation, and afterwards distilling off one gallon. It is principally given to children as a carminative. The dose for an adult is from two to six fluidounces.

The *Feniculum*, Sweet Fennel, or Common Fennel, a biennial plant, originally found in the south of Europe only, but now growing abundantly on our chalky soils. Three varieties: the root of the first of which, the *common fennel*, and the seeds of the second, the *sweet fennel*, are those found in the shops. The roots are the produce of

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our own country, and are taken up in the spring ; but the seeds are generally imported from Italy.

Fennel seed appears to possess much the same properties as dill, anise, and caraway. The dose, in powder, is from one scruple to a drachm. A distilled water may be obtained from them in the same proportion, and in the same way, as mentioned under dill. The *Essential Oil* possesses the same virtues as the seeds : the dose is from two drops to twenty.

The *Segetum*, a native of Spain.

DINNER, the second meal of the day, and most commonly that at which the greatest quantity of food is eaten.

The best time for this meal is, unquestionably, between the hours of twelve and two o'clock in the day. The practice of dining late is exceedingly to be deprecated : were there no other reason for its impropriety, that of remaining for six or eight hours, or even more, without food, and then eating a large and hearty meal, which produces for some hours afterwards both indisposition and incapacity for motion, ought to be quite sufficient to prevent such undue fasting and excessive repletion. Whereas by dining at one o'clock, the disposition for food is moderate, and the incapacity and disinclination for exertion in the afternoon is scarcely felt at all. We are aware that fashion, and the habits of society, particularly in our cities, are at open hostility with this doctrine ; but, nevertheless, as guardians of the public health, it becomes our duty to state these truths ; and we feel perfectly assured that those who are at all desirous of escaping from dyspepsia, hypochondriasis, and that dread array of symptoms attending on intemperance, both in eating and drinking, will feel grateful for the warnings which here and elsewhere in our work we throw in their way.

Upon the kinds of food for dinner we are by no means disposed to be cynical. The valetudinarian and dyspeptic will find it best to confine themselves to one kind of animal food, without much, if any, fat ; and to roast in preference to boiled ; potatoes, and

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other vegetables in season, and in moderate quantity, may of course be taken. But pastry, particularly baked pastry, should be shunned by all whose digestive faculties are in any degree impaired. Their drink with their food should be pure water. Whatever is taken of a stimulant liquid should be taken afterwards. To two or three glasses of good wine occasionally, port is generally to be preferred, or a weak glass of spirits and water for the middle aged, and those advanced in life, we see no objection. But water for the young by all means.

To those sons of Hygeia, whose pulse throbs with vigour, and whose spirits and elasticity impel them in their career, heedless of the coming seasons, we can only say that, with all the energy which they feel, they may find wisdom in the regulation of the quality and the quantity of the food which they consume ; and that large potations of fermented liquors at this meal, and the partaking of a variety of dishes, will, sooner or later, convince them that there are bounds, over which nature herself will not with impunity permit them to step. See **DIGESTION, BREAKFAST, and ALIMENT.**

DISCOUNT, or REBATE, is an allowance made on a bill, or any other debt not yet become due, or on goods bought, in consideration of making present payment of the bill, debt, or for the goods.

DISEASE, an alteration of any kind in the human body from a state of perfect health. It is termed general when it pervades the entire system, and partial or local when confined to an individual organ.

General diseases are divided by **BROWN, DARWIN**, and their followers, into two orders : the first arise from the action of stimulants upon the human body, which produces an increase in the circulation of the blood, and is accompanied with other symptoms commonly denominated inflammatory, such are inflammation of the lungs, distinct small-pox, &c. The second arise from an abstraction, or diminution of the ac-

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tion of the usual stimulants necessary for the maintainance of health ; such are the long train of diseases accompanied with dyspepsia, atrophy, hypochondriasis, &c. and typhous, and other fevers attended with more or less prostration of strength, mental depression, and other unequivocal symptoms. Whatever might have been the diseases and medical practice of our ancestors in this country, it is now generally admitted that the diseases of debility are considerably predominant over those of inflammation, that is, those which originate from increased excitement. Inflammatory diseases, it is true, do now and then occur ; and recourse to the lancet, even in contagious fever, has latterly obtained respectable advocates ; but we still think that depletion, by blood-letting, demands very great caution in its adoption, and that the diseases of debility, requiring the administration of stimulants for their cure, are in much greater proportion than those of the inflammatory kind. See BRUNONIAN SYSTEM, and MEDICINE.

DISLOCATION, or LUXATION. A bone is said to be dislocated or luxated when that part forming a joint is moved out of its place. When the bone is forced entirely out of its cavity it is called complete ; when this is not the case, it is partial and incomplete. When there is a wound of the soft parts communicating with the joint, it is called compound ; and when there is no wound, a simple luxation.

The symptoms of a dislocated bone, are inability to move the injured limb ; pain, tension, and deformity in the part affected ; and sometimes inflammation, starting of the tendons, and fever ; the three last are greatest in partial dislocation. The swelling which first appears is always inflammatory ; but afterwards a secondary swelling comes on.

In dislocations, the best surgical advice, if possible, should be immediately procured. But as it sometimes happens that dislocations take place in situations where no surgeon can be had, at least for many hours, such cases require, more than almost any others, the

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care and attention of the casual attendants ; and here it is that a necessity for a competent knowledge of anatomy being acquired by every person is manifestly evident. To the utility of the knowledge of the art of opening a vein by the generality of persons, we have stated our objections under the article BLOOD-LETTING, but surely, in dislocations, where the disease is generally evident, a knowledge of anatomy, sufficient to reduce the luxation, is a very desirable qualification, the acquisition of which cannot be too much encouraged.

The first thing to be done in dislocations is, to restore the bone to its natural position, with as much ease and expedition as possible : to retain the bone in its situation till the parts have recovered their tone, and to obviate all uneasy symptoms. When, however, the surrounding skin and muscles are much contused and inflamed, endeavours should be made to remove the inflammation, by local bleeding, or goulard-water, and laying the limb in an easy posture before attempts be made to restore the bone to its natural position. After the reduction, all that is necessary is, to place the limb in a relaxed posture, and to support the bone with a bandage, till the parts have recovered their tone. The most urgent symptoms which accompany dislocations are pain, inflammation, and swelling. These usually abate soon after the reduction ; but if any degree of inflammation remain, the use of leeches is the best remedy.

DISPATCH, is said to be the soul of business ; it is not only that, but it is one of the most important qualifications in the conduct of all human affairs ; dispatch is another name for industry ; he who cultivates a habit of dispatch, will never know what it is to be idle ; dispatch should pervade all our actions : in a word, he who desires to be most happy, will always be actively employed ; and he who cultivates dispatch, will often accomplish more than could be previously supposed possible. By dispatch we are enabled, not only to

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attend to our own immediate concerns, but also to those of others ; dispatch enables us to fulfil those duties from which idleness and sloth shrink, and which are great items in the sum total of human happiness.

DISPENSARY, a charitable institution, very common in London, and some other large towns ; it is usually supported by voluntary subscription, and has one or more physicians, surgeons, and apothecaries, who attend in order to prescribe for the poor, and if necessary, to visit them at their own habitations, and supply them with medicines gratis. Such charities, when well conducted, are, in many respects, more useful than an hospital. Their great defect is, that the operation of medicines is not seconded by the diet, which, in numerous instances, it is desirable should be adopted.

DISPOSITION, that structure, or state of the human mind, considered principally in relation to its good or bad qualities : thus we say a bad disposition, a good disposition. That the natural disposition may be improved or deteriorated by education, we cannot doubt. There is no disposition of the human mind, however, more desirable to the possessor himself, or which renders him more agreeable to others, than good humour ; it is to the mind, what good health is to the body : it enables a person to enjoy every thing agreeable in life, and to communicate such enjoyment to others. Disposition may originate in a general feeling, or organic structure ; it is the business of education to counteract it, whenever it is injurious. See **CAPACITY**.

DISSIMULATION, a species of deceit, or hypocrisy, according to Lord Chesterfield, perfectly understood by diplomats and negotiators. He, however, who adopts it, may be a sinuous statesman, or a designing casuist ; but he can never be a great, or a good man. See **DECEIT**.

Distemper in Cattle. See **INFLUENZA**.

DISTEMPER IN DOGS, is a violent disease, frequently fatal to these

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animals. It begins with a dry, husky cough, want of appetite, and a running from the eyes ; as the disease proceeds, the dog is affected with convulsive fits, foams at the mouth, runs round, and has a constant desire to dung ; it is also attended with vomiting. It is most probably a catarrhal affection, extending to the lungs, and requires emetics, purging, and other evacuants for its cure.

DISTILLATION, is the act of dropping, or falling in drops ; and is more particularly applied to a process in which water, or other liquids, are placed over a fire, in suitable vessels, and certain parts are separated from other parts of the same liquid, by the agency of heat : it is in every sense of the term, a chemical process.

Distillation is conducted in several kinds of vessels. Where strong acids form any of the articles used in mixtures for distillation, glass ones, commonly called retorts, are generally employed. But in the more common processes, particularly such as the distillation of essential oils, waters, and spirits, a copper vessel, usually called a still, is employed.

The still is of a very simple construction ; it is usually made of copper, and consists of a hollow *body*, somewhat cylindrical, and contracted at the top, called the neck, so as to admit conveniently the *head*, or moveable upper part, which is contracted also, from its bellied rotundity above, into it a few inches ; by which means, with proper luting, the head and body become one vessel. At the top of the head, is soldered a curved tube, of the shape of a swan's neck, gradually lessening as it descends, the beak of which is inserted a few inches into another tube, called a *worm*, from its spiral convolutions. This juncture is also, in distillation, closely luted. The worm is generally made of pewter, and is fixed in a frame in a vessel called a worm-tub : it goes gradually descending, about six times round. The upper end projects a few inches out of the upper part of the side of the worm-tub next the still, and the

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lower end projects also a few inches out of the side of the lower part of the worm-tub, at a suitable distance from the still, where can be placed a proper vessel to receive the distilled product. The worm-tub is filled with water to condense and cool the liquor as it comes over. The still is usually, unless very small, furnished with a cock at its bottom, by which the remaining fluid after the distillation is effected, may be drawn off; it is set in bricks, in the same way as a common copper or boiler, for boiling liquids, usually is.

The principal art in this mode of distillation is, the application of a regular and steady heat, so as to cause a constant stream of fluid to distil, and yet, that the more volatile parts, (those generally are wanted), only shall come over: for if the heat be pushed to excess, no proper distillation takes place; all the ingredients in the still, without any separation of their parts, coming over. Practice, however, is the best teacher on this subject.

The distillation carried on in glass vessels is either in sand-heats, in the open fire, or over the flame of lamps.

Distillation in what is called *balneum marie* is a very convenient process, where the remainder of the product after distillation is wanted to be kept. It consists of a copper cylinder, with a bottom, made to fit the neck of, and to be inserted into the still, and to descend within a few inches of the bottom of it, so that the materials to be distilled can be placed within it, and yet have no communication with the other parts of the still, which is filled two-thirds, or thereabouts, with water. The head of the still is made to fit the bath, the same as it does the still itself; by these means a more regular and equable heat is applied to the liquor to be distilled, and which cannot be easily raised much above the boiling point, or 212° of Fahrenheit's thermometer.

Chemists occasionally use more complicated apparatus for the distillation and decomposition of particular substances, but it is not necessary that we should enumerate them here.

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Various patents have been obtained for improving the process of distillation. One lately by Mr. TRITTON, and another by Mr. BARRY, are deserving of attention, by those whom distillation more immediately concerns.

For the *Distillation of Sea-water*, an apparatus has lately been completed by Messrs. FRASER and CHATER, at the cannon foundery, Clerkenwell, London, which promises to effect this object very successfully; and, at the same time, offers every use and convenience of the present ship-stove. The whole apparatus stands in a space four feet square, and is a combination of an open fire, with a large boiler, ovens, or roasters, and many vessels in which cooking is performed, by boiling-water or steam: the boiler surrounds the fire, and supplies steam very readily and abundantly. This is conveyed, if occasion require, into the cooking vessels; if not, into spaces which surround them, where it is condensed, and the water collected beneath. We consider this apparatus altogether, one of great importance and utility.

DISTILLER of BRITISH SPIRITS, must take out an annual license at the excise office, for which he pays 20l. He is also liable to surveys; and to various penalties for neglect, &c. No distiller can sell spirits by retail, that is, in less quantity than two gallons, under the penalty of 200l.

DISTORTIONS of the bones, may arise from external injuries, from a diseased constitution, or from a diseased state of the bones; but they are most frequently owing to a weakly, delicate constitution, as in rickety, or scrophulous cases.

In the treatment of distortions, particular attention ought to be paid to the cause of the disorder. If it appear to arise from the patient's continuing long in a particular posture, every habit of this kind should be particularly guarded against, on the first appearance of the disease. He ought to sleep on a firm hair-mattress, that his body may lie on an equal surface. An invigorating diet, and bathing,

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bark, and other tonics, should be also used.

Machines have been invented to correct some distortions; they are occasionally of advantage; but they should be adopted with great discrimination. In children, such machines promise more advantage than in adults, from the natural softness of their bones. See **BANDY-LEGS**.

DITTANY, THE WHITE, or *Dictamnus fraxinella*, a plant of one species only, a native of France and Germany, with large white flowers; it is singular in emitting inflammable odorous effluvia. It was formerly used as a stomachic, but is now unknown in medicine.

DIURETICS, those medicines or substances, which, when taken internally, increase the quantity of urine.

Besides those medicines which are known to be diuretic, many of our culinary vegetables, and fruits, are also more or less so: the tops of asparagus, and hops; lettuce, parsley, and celery; the subacid fruits, such as cherries, currants, grapes, mulberries, apricots, peaches, &c. Horse-radish, onions and garlick, are powerfully so; and the juice of the common radish, mixed with sugar, to the consistence of a thin syrup, and taken in doses of one or two spoonfuls every three hours, or oftener, is said to be an excellent diuretic.

The powerful diuretics should, however, be administered with caution; we have even known strangury produced by large quantities of the horse-radish root being eaten.

In diabetes, in bloody urine; in inflammation of the kidneys or bladder; in violent spasms, when stones are confined in the urinary passage; diuretics should be avoided.

DIURETIC BALLS for horses, may be made thus: take of Castile soap half an ounce; of powdered yellow resin half an ounce; of common turpentine two drachms; of aniseed, or caraway-powder, sufficient to form a ball.

A diuretic powder for horses, may be made thus: Take of nitre in powder, half an ounce; yellow resin in powder,

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half an ounce; tartarized antimony one drachm. Mix them together for one dose.

DIVER, or *Colymbus*, a genus of birds consisting of many species, with a toothless bill; they walk on land with great difficulty, but swim and dive with great dexterity. The Guillemots, with a slender bill, chiefly inhabit the sea; the flesh tough, and, as well as the eggs, nauseous. The Divers frequent the northern lakes, have a strong bill, are monagamous, fly with difficulty, and in breeding time prefer fresh waters. The Grebes are tailless, with a strong bill, frequently found about the fresh waters of southern Europe. The following are a few of the species:

The *Grylle*, or Black Guillemot, with a black body, and wing coverts white. Five other varieties; inhabits Europe and America; from thirteen to fourteen inches long.

The *Troile*, or Foolish Guillemot, with a black body, breast and belly snowy. Two other varieties; the first, seventeen inches long; inhabits Europe and America; sometimes seen in the north of England.

The *Septentrionalis*, or Red-throated Diver, inhabits the lakes of Europe, makes a clamorous noise; two feet five inches long.

The *Glacialis*, or Northern Diver, inhabits the seas about Iceland and Greenland.

The *Imber*, or Imber-goose, inhabits the Arctic ocean; two feet long.

The *Cristatus*, or Crested Grebe, twenty-three inches long; inhabits northern Europe, and also various parts of England.

The *Minor*, or Didapper, frequent in the lowland districts of this country; about the size of a field-fare.

DOCK, or *Rumex*, a genus of plants comprising thirty-seven species, scattered over the globe; ten are common to the marshes, meadows, mountains, or woods of our own country. The following are some of the principal:

The *Acetosa*, or common sorrel, well known; the whole herb acid and pleasantly astringent; yielding a juice

which has been crystallized, and affords an acid, which is used occasionally as a substitute for the juice of lemon. There is a variety with broad leaves, named great mountain sorrel.

The *Dentatus*, or French sorrel, a native of Germany.

The *Acetosella*, or Sheep's sorrel, found in our own pastures.

The *Patientia*, or Patience dock, or rhubarb, with a large root, a native of Italy.

The *Sanguineus*, Bloody-veined dock, or blood wort, a native of our own woods.

The *Lunaria*, or Tree sorrel, with a woody stalk, ten or twelve feet high, a native of Italy.

The *Crispus*, or Curled dock, found in our meadows; a troublesome weed.

The *Obtusifolius*, or Broad-leaved dock, growing among rubbish, in farm yards, courts, &c. Fallow deer are very fond of this species.

The *Acutus*, or Sharp-pointed dock, common in our woods and hedges, and sometimes found in fields and meadows.

The *Aquaticus*, or Water-dock, grows in ditches, peat-marshes, &c. The root of this last is powerfully astringent, and was formerly used as a remedy in scurvy and some cutaneous affections, but is now rarely employed.

The leaves of *Common Sorrel* have a grateful, austere, acidulous taste, and are refrigerant and diuretic; their expressed juice, diluted with water or whey, affords an useful drink in inflammatory fever. They may be also eaten as salad. In France the plant is cultivated for the use of the table.

Many of the docks are very troublesome weeds, in both arable and grass lands. To eradicate them in grass lands, the root must be completely taken out, by the dock-iron, on or before the time of flowering, and thoroughly destroyed; this can generally be effected after much rain. Every bit of the root which is left forms a new plant, even after the heart has been consumed by a species of caterpillar. But it is said that if it be cut in June, and the operation repeated as soon as the second

shoot appears, the root is found to decay, and that it will not germinate a third time. These docks are refused by cattle and eaten by fallow deer, which prevent their flourishing in parks.

Docking. See HORSE.

DODDER, or *Cuscuta*, a genus of plants containing seven species, scattered over the globe, two of which are common to our own country: the *Europæa*, or greater dodder, a parasitic plant, found on nettles, hops, and flax, almost without leaves; it is a pernicious weed. The *Epithymum*, or lesser dodder, is found attached to thyme. Both these plants decay at the roots, and are afterwards nourished by the plants which support them.

Doe. See DEER.

DOG, or *Canis*, in zoology, a genus of quadrupeds containing twenty species, characterized by voraciousness, tearing what it devours, swift in its course, but cannot climb trees; the female brings forth many at a litter; has usually ten teats; they are as follow:

The *Familiaris*, with a re-curved tail, leaning to the left. The varieties in this species are very numerous. The shepherd's dog, the water-dog, the spaniel, the pug-dog, the bull-dog, the mastiff, the hound, the grey hound, the pointer, the lurcher and turnspit, are some of the principal. It goes with young sixty-three days.

Of all these the shepherd's dog has been supposed by some naturalists to be the original source; others attribute the stock to the wolf, others to the jackal, whilst others assert that the whole must have been a different species from the beginning. The wilder varieties are generally supposed to be descendants of dogs once domesticated.

The dog should always be provided with plenty of good water for his drink.

The good and useful qualities of dogs are too well known to need description, but from their communicating by their bite the dreadful malady of Hydrophobia, we can hardly imagine any uses to which they can be put as compensation to our species for the infliction of this horrible disease. See BITE

DOG

of a **MAD DOG**. They are also liable to many other diseases. See **DISTEMPER** and **MANGE**.

The *Lupus*, or Wolf, inhabits Europe, Asia, Africa, and North America; hunts in packs, and destroys cattle, men, and even its own species; howls in the night, and is destroyed by the *lichen vulpinum*. Head long, nose pointed; ears erect and sharp; its tail is bent inwards, bushy, pendulous, and black at the tip; neck and head of an ash colour; body pale brown, tinged with yellow. There are many varieties: yellow, white, black, and grey striped with black; the last inhabits the Cape of Good Hope.

The *Mexicanus*, or Mexican wolf; a variety white; inhabits the warmer parts of Mexico.

The *Thous*, or Surinam wolf, with a greyish body, the size of a cat.

The *Hyæna*, or striped Hyæna, with a straight tail; hair on the back near a span long; streaks of the body brown and black; between the anus and tail a duct, secreting a fœtid matter. Inhabits the East, Persia, and Africa; burrows in the ground: dwells in caves; infests burying grounds, tearing up and devouring the interred bodies.

The *Crocuta*, or spotted Hyæna, inhabits Guinea, Ethiopia, and the Cape of Good Hope; preys by night; devours carcases, and attacks man; its voice is terrible.

The *Aureus*, or Jackal, with a tawny body; inhabits the warm parts of Asia and Barbary; prowls by night in flocks of two hundred; attacks children, and feeds on the smaller animals, fruits, and carcases; female gravid one month; it is easily tamed; smells of musk; at the cry of one, all within hearing howl hideously, and urge other beasts to hunt the stag, while the lion, or tyger, lying in wait, seizes the prey, and satisfies his hunger, leaving to the crouching jackal the remainder; whence the tale that this animal is the lion's caterer.

The *Mesomelas*, with a face resembling a fox; common at the Cape.

The *Lycaon*, or Black Fox, inhabits

DOG

Europe, Asia, and the colder parts of America. The most crafty of its tribe.

The *Vulpes*, or Fox, inhabits Europe, Asia, Africa, and America, as far as Chili; very cunning; feeds on lambs, poultry, small birds, on the dung of other animals, and fattens on grapes. Emits a rank odour from the base of its tail.

The *Alopex*, or Brant Fox, inhabits Europe, Asia, and Chili; two varieties.

The *Corsac*, inhabits Asiatic Russia; stinks, howls, or barks; less than the fox.

The *Karagan*, inhabits the deserts of the Kalmucks and Kirgisees.

The *Cinereo-Argenteus*, inhabits North America; smaller than the fox.

The *Virginianus*, or Grey Fox, inhabits Carolina, and warm parts of North America; easily tamed.

The *Lagopus*, or Arctic Fox, inhabits round the frozen sea, and North America; fur valuable; two varieties: white, and bluish.

The *Crucigera*, or Cross Fox, of a tawny colour; a black cross on the shoulders; fur thick, soft, and valuable; inhabits cold countries.

The *Chilensis*, inhabits Chili.

The *Australis*, or Wolf Fox, inhabits America, and the Falkland Islands near the shores; tame; barks, and stinks.

The *Cerdo*, Fennu, or Zerda; body pale, or white mixed with grey, and bright yellow; inhabits the desert of Zaara and Lybia; less than the rest of the tribe; swift, yelps like a young dog.

Dog-berry. See CORNELL.

DOG-FLY, or *Cynomia*, a genus of insects common in woods and among bushes; they are particularly troublesome to dogs.

Dog-grass. See WHEAT.

Dog's Mercury. See MERCURY.

Dog-rose. See ROSE.

DOGS TAIL GRASS, or *Cynosurus*, a genus of plants consisting of nineteen species, scattered over the globe, of which two are common to our own country; the *Cristatus*, found in our Meadows; and the *Echinatus* in

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seeds of the last may be made into bread.

Dog's Tongue. See **HOUND'S TONGUE.**

Dog's Violet. See **VIOLET.**

Dog-wheat. See **WHEAT.**

Dog-wood. See **CORNEL.**

Doloureux, Tic. See **TIC DOLOUREUX.**

DOLPHIN, or *Delphinus*, a genus of fishes consisting of five species, as follow :

The *Phocaena*, Porpoise, or Sea hog. Colour of the body blueish, black above ; head obtuse, eyes small ; teeth small, in each jaw forty-six. Female has a kind of concealed udder, which secretes a milky fluid, with a cavity into which the young thrusts its snout to suck ; it inhabits the European and Baltic seas ; found in the summer season on the coasts of Great Britain, following greedily the track of migratory fishes, as mackerel, herrings, and salmon, tumbling over in the water with a loud noise ; length from five to ten feet ; sometimes weighs ten hundred weight. Flesh coarse, something like pork ; not now eaten, although formerly reckoned a dainty, and even a royal dish. From its fat is obtained a considerable quantity of oil.

The *Delphis*, or Dolphin, with an oblong roundish body ; mouth extensive, reaching almost to the thorax. Inhabits the European and Pacific seas, and occasionally found on our own coasts ; it swims with velocity, and preys on fishes ; dexterously fastens itself to the back of whales as they leap out of the water, making them bellow with its gripe ; swims in nearly a straight line, and only appears of a crooked form : it is from nine to ten feet long ; slenderer than the porpoise.

The *Orca*, or Grampus, with the snout turned up, teeth broad, and serrate ; another variety with the snout a little truncate, teeth pointed, dorsal fin, long and bony : known by the name of sword grampus. The body of both black above, white beneath ; lower jaw much longer than the upper, teeth forty. Inhabits the European and At-

DOR

lantic seas, and occasionally our own coasts ; twenty-four feet long, twelve broad ; like the Dolphin, but with far more violence attacks and adheres to the backs of whales, and often destroys them ; fights also with seals,

The *Leucas*, or White Dolphin, called by the Russians belluga. Inhabits the Arctic pole ; gregarious ; when young dusky in colour, afterwards white ; eighteen feet long.

The *Melas*, with an obtuse snout, almost the whole body black, smooth, and shining like oiled silk. When full grown about twenty feet long. The body is thick. The female has two teats, larger than those of a cow, out of which the milk flows when squeezed. They are gregarious, inoffensive, and rather timid ; extremely fat, and yield a considerable quantity of oil.

DORMOUSE, or *Myoxus*, a genus of animals, which remains torpid during the winter ; they walk or rather leap on their hind legs, bounding three or four feet at a time ; they feed only on vegetables ; burrow under ground ; sleep by day and watch by night ; they carry food to the mouth by the fore paws, and drink by dipping the fore palms in water. Four species, as follow :

The *Glis*, or Fat Dormouse, inhabits the woods of Europe and southern Asia : six inches long ; the tail five. Flesh formerly esteemed a great delicacy by the Romans, who fattened them as food. Its general manners resemble those of the squirrel ; is not easily tamed.

The *Dryas*, or Wood Dormouse ; inhabits Europe ; differs from the rest only in colour.

The *Nitela*, or Garden Dormouse : inhabits Siberia and the southern parts of Europe, chiefly in gardens, where it destroys all kind of fruits.

The *Muscardinus*, or Common Dormouse, with a tawny body, inhabits Great Britain and other parts of Europe, in woods and thick hedges, seldom in gardens ; collects nuts and walnuts, which it eats sitting upright, and buries what is left : torpid in winter. Body three inches long, tail rather longer.

DOS

DOSE, the quantity of medicine which is given at one time. We have mentioned the doses of every medicine under the respective articles; but it must be evident to the most inexperienced, that in the administration of medicines, the age, constitution of the individual, and the nature of the complaint, ought to be taken into the account. The quantities which we have stated are meant to apply to adults, unless otherwise expressed. When medicines are given to young persons or to children, they require various modifications in the dose, which must not be regulated always by the age alone. The doses for adults are generally mentioned from the lowest to the highest quantity; of course any of the intermediate quantities may be taken according to the nature of the case. Some articles, as far as their effects are concerned, may be given at once in much larger doses without hazard; but the doses of all the active medicines, such as calomel, aloes, &c. should be departed from with great caution, and indeed by those not well informed in medicine, not at all.

The robust countryman will also frequently require a more powerful dose of medicine than the debilitated citizen; the young adult than the old, and the male than the female; but even in these many exceptions will be found.

Although it is not easy to lay down fixed rules for the diminished doses of medicines when given to young persons and children, we think it, however, advisable to furnish our readers with the following, by which such administration may be guided.

When the dose for an Adult is one, or one drachm,—the dose from 21 years to 14 should be two-thirds, or two scruples;—from 14 to 7, one-half, or half a drachm;—from 7 to 4, one-third, or one scruple;—for 3, one-sixth, or half a scruple;—for 2, one-eighth, or eight grains;—1 year, and under, one-twelfth, or five grains.

In general, medical men give young children much more than one-twelfth (often a sixth) of the quantity here

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set down for those of one year old, or under. And the young man of sixteen will frequently require the full dose of an adult.

The **DOSES OF MEDICINES** for **HORSES** are by no means so well defined or understood as those for the human subject; and those for **CATTLE** still less so. In general it will be perfectly safe to give *right* times the quantity of medicine to a horse which is prescribed for the human body; but farriers often give drugs in much larger proportions. The doses for cattle are still more uncertain. In some cases they require larger doses than horses, in others less; *twelve* times the quantity prescribed for the human subject, may, however, generally be given to cattle with perfect safety.

DOUGH, flour and water kneaded into a paste; when fermented with yeast, or leaven, it constitutes the dough from which bread is made.

The dough for bread is, in the small way, made by the hand; but in the large way, and in populous cities, the process is often performed with the feet, a practice which deserves censure, as it may be easily avoided by the use of machinery.

DOUBT, or uncertainty of mind, is a state at all times attended with more or less uneasiness; such is the desire which most persons have to escape from it, that the most gross and palpable errors are often adopted as truths, rather than the indurance of that uneasiness and suffering which accompany a state of doubt. The wise man will, however, not fail to separate those things, both in the moral and natural world, which are indubitable from those which, from the very nature and constitution of man, must always be accompanied with more or less doubt. Thus we think it indubitable that a virtuous life is the most conducive to happiness even here, and a vicious one to misery; but as we also know that many persons possessing very different speculative opinions have been moral and virtuous, we may charitably permit doubt, upon subjects purely speculative, a considera-

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ble range. Doubt has been called the commencement of wisdom: it may be so; but persons least disturbed with doubt, appear to enjoy the greatest portion of earthly happiness.

Dove. See PIGEON.

Dove-Cote. See PIGEON-HOUSE.

DRACHM, or **DRAM**, a name given to a division of the ounce in avoirdupoise, and apothecaries' weight. In the former it is one sixteenth of the ounce, in the latter one eighth. The drachm, in the composition and doses of medicines mentioned throughout our work, is the last.

Draft. See BILL.

DRAG, an implement used in agriculture for the purposes of clearing the land, and preparing it for putting in the seed. The drag is made very differently in different parts of the kingdom. The common drag is of a triangular form, being about seven feet in width behind, and having thirteen or fourteen teeth in each of the sides, set in such directions as to cross each other, being fastened at top either by screws, or by some other convenient means. The duck-footed drag, however, with four rows of teeth, is in many cases preferable.

DRAG, the **WHEEL**, an implement constructed so as to prevent the accidents which frequently happen to horses when drawing loaded carts down steep hills or declivities. One invented by Mr. KNEEBONE, and for which a bounty of twenty guineas was given by the Society of Arts, is a very simple and a very useful contrivance.

DRAGON, or **DRACO**, a genus of animal consisting of one species, the *draco volans*, or flying dragon, with fore-legs distinct from the wings; body of an ash colour, varied and clouded with brownish and whitish, and covered with minute scales; tail eight inches long; length of the body about four inches. It inhabits India and Africa; is distinguished from the lizard tribe merely by having a broad lateral membrane strengthened by bony processes; it wanders about trees, and is able, by means of the membrane, to spring from

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bough to bough, and to support itself for a few moments in the air; feeds on insects. It is in every respect a harmless and inoffensive animal.

The tremendous dragon of ancient poets and old naturalists, is a mere fiction.

DRAGON'S BLOOD, or *Sanguis draconis*, the red resinous juice obtained by wounding the bark of a species of the genus *Calamus*, chiefly that of *Calamus rotang*. It is obtained from the Molucca Islands, Java, and the East Indies, and is generally much adulterated. The best kind is of a dark red colour, which, when powdered, changes to crimson. It readily melts and catches flame. It has been occasionally given as an astringent, and in hæmorrhages; But its use is now almost totally laid aside.

As an article for staining different matters in the arts it is of some use.

DRAINING, or the art of removing the superfluous moisture from land, is one of the most important branches of husbandry. The basis of this art was laid by the discoveries of JOSEPH ELKINGTON, a Warwickshire farmer.

The benefits of draining are evinced in the improvement of the soil both of grass and of arable land; in woods and plantations; in the improvement of wastes; and in the melioration of the climate. On the whole there are no means by which the value of land can be so advanced, or from which so many advantages can be derived, at a moderate expense, as that of draining. Both in England and Scotland, the greater part of the counties stand more in need of draining than of manuring; and there are very few districts where a knowledge of this essential means of improvement is so general or so perfect as it ought to be.

The wetness of land may arise either from surface-water; from soils absorbing and retaining a superabundant quantity of moisture, either from their own texture, or the quality of their subsoils; from land springs from surface water; from springs from subjacent

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water; from back water from ditches or ponds; and from floods from rivers, lakes, or the sea.

The sorts of drains now commonly used are the following: the open; the covered; the arched; and the vertical, or pit-drain.

Open drains, or ditches, often answer the double purpose of conveying away superfluous water, and of enclosing the fields; although they make a hazardous and inconvenient sort of fence without the addition of a bank, a wall, a hedge, or a railing.

In cultivated land, where the ridges are of a proper length, breadth, and height, and the furrow of an adequate depth, and skilfully directed, much surface water may thus be carried off; but where the country is flat, and the soil peculiarly strong, a complete drainage is absolutely essential as the basis of its future improvement. The mode practised in the *Carse of Gowrie*, in Scotland, a district containing about 30,000 acres of rich clay loam, has been attended with great success, and is as follows: large drains from fifteen to twenty feet deep, resembling small canals, were cut at suitable distances from each other, for conveying the water collected in them to the adjoining river. Ditches of a smaller size were next made, surrounding and intersecting the farms, so as to serve for the divisions of the different fields, the water of which they collected, and emptied into the larger drains. The depth of these ditches was seldom less than four feet; their width at top six feet; and the bottom, from one to one foot and a half; they are scoured annually. Where the fields are of a uniform and level surface, the common furrows between the ridges, if sufficiently clear, will keep the ground dry; but as fields are seldom without some inequalities, the last operation after they are sown and harrowed, is to draw a deep furrow through every hollow in the field, in such a direction as to communicate with the other furrows which divide the ridges, and with the ditches at the extremities of the inclosures. These furrows are made by

the plough, but must be widened, cleared out, and shaped by the spade, in order that they may discharge the water freely. To keep them clear is a very essential part of the farmer's attention. The effects of this system of drainage are such as to render the land so free and tender, that less labour prepares the ground for the crop,—less seed is necessary,—less manure is required,—and, as neither drought nor damp have any very injurious effect upon the soil, an abundant crop may be expected in all common seasons.

These *water-cuts*, or furrows in wet fields, should be made as soon as the plough leaves them; and they ought to be frequently examined, more especially after the melting of snow, to see that nothing in them impedes the passage of the water. Such furrows are also equally necessary after spring ploughing, to prevent water from lodging in any part of the field, however wet the weather; to this end the head lands should be cut through where necessary.

Water furrowing is also of great advantage in pasture fields; the cuts or furrows of which ought to be carefully scoured out before the winter.

In open districts, open drains are made of the subjoined shape, and turfed at the bottom, so that there is no loss of herbage. No water ever lies in these drains; and a part of a county, the Coventry estate in Worcestershire, which half a century ago was a mere morass, has now become, by these drains, perfectly dry, healthy for sheep, and fit for cattle. It is most advisable that these drains, however, in ploughed lands, should not be ploughed with the rest of the field, but that they remain always in grass.

It is a general rule in open drains, that they should be three times as wide at the top as they are at the bottom; and in peat-mosses, or soft soils, the width at top should be more. The fall, or declivity, should be such as to allow the water to run off without stagnation,



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but not so rapidly as to injure the bottom.

In the making of all drains, they should be begun at the lowest place, so that the water may readily pass off as the workman proceeds upwards.

Covered drains are sometimes made by the plough, as being least expensive; but only small drains can be made in this way. Such drains ought in general to be four feet deep: the size however must be regulated by the quantity of water to be conveyed away. The width should be only sufficient to give room to work, unless from the softness of the soil a greater slope is necessary. The depth should be such as to allow a proper quantity of earth above the drain, that the materials in it, and what covers them, may not be injured by the horses and cattle in the act of ploughing.

Covered drains are frequently hollow where the run of water is large, or the materials good: this last is the case when the drain is made of stones either inserted in a triangular shape, or covered by flags; or where bricks or pantiles are used; which are preferable to stone. Sod, or turf drains, which also are not filled, are made by digging a trench of a proper width, not less than three feet deep; and if the last spit be taken out by the narrow under draining spade, a shoulder is left on each side, upon which a sod or turf is laid the grass side downwards, and the mould thrown over it. These are the least expensive of drains.

The materials for partially filling drains are numerous: *stones*, which answer for a considerable time provided the drain be sufficiently wide at bottom; if stones, to the depth of at least two feet are used, and they are properly covered;—*bricks*, which are sometimes expressly made for the purpose, and exempted from duty;—*turf*, or *sods*, which many recommend in preference to any other substance;—*wood*, particularly old thorns cut into billets;—*green bushes* not in leaf;—*black-thorn*;—*heath*, or *ling*;—*fern*, *furze*, or *broom*; and where the drain is small, and better materials cannot be had, even *straw*, either loose, or twisted into ropes as

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thick as a man's leg. The materials must be covered with loose straw, fern, rushes, or turf, before the mould is thrown in.

When the soil is very wet, it will be necessary to cut the small drains near each other; from forty to fifty feet distant in common soil; and from twenty to thirty feet in the more stubborn. It is scarcely necessary to add, that deep and large ditches must be cut around wet fields, into which the water from the smaller drains is to be conveyed.

The best period for making these drains, is when the land is in grass, or in fallow.

The expense of *arched drains* of stone or brick, prevents their being adopted, unless where the ground is very loose, or where open drains are inadmissible. Where flat stones abound, drains covered by them may in general be made large enough for every essential purpose.

Vertical, or pit drains, may on some occasions be useful. If the spot where a confined reservoir of water exists can be ascertained, which may be done by boring with an auger, sink a pit into the place, of such a size as will enable a man to work within its bounds, or about three feet in diameter until it reaches the water meant to be brought up, which will rise as soon as the pit reaches it. The pit should then be filled with land stones, or pebbles, and the water be conveyed by a proper drain to some adjoining ditch, and thence to the nearest stream or river.

Spouts, or springs, rising in the middle of a field, may on some rare occasions be led into a pit sunk through the clay, and the water may thus escape downwards into a porous substratum.

The instruments used in draining, are the *common plough* to open the trench;—the *miner*, consisting of a plough-share fixed in a strong beam, without mould-boards; it is drawn by four or more horses along the bottom of of a furrow made by a common plough;—the *mole-plough* with wheels;—spades of various shapes: the *top draining-spade* is narrow at the end; and the spade from the lower part, or bottom, is

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almost pointed ; a *breast draining-spade* is also used : it is the common paring spade with both sides turned up ; a *scoop* is also used for smoothing and cleaning out the bottom of the drains ; a *sod knife* is also useful ; the *borer*, or auger, used in draining, is very similar to that employed in searching for coal, and other subterraneous minerals.

In conclusion, we may add, that all clay lands are best drained by open drains, and that where the soil and substratum are loose, so as to admit water to pass freely, covered drains are to be preferred, unless in peculiar circumstances, or situations. We may just also mention that *earthen pipes* have recently been made and brought into use in Staffordshire for drains. They are formed by means of a press, and are then burnt ; they are afterwards laid down with a small quantity of coarsely sifted gravel, without either hush, straw, or stubble. It is said that they are very economical, and if the joints are not fitted so close, but that the water may pass into them, they may become of considerable utility.

DRAM. See **DRACHM.**

DRAMA. See **THEATRE.**

DRAUGHT, in trade, an allowance on goods which are weighed, made by the king to the importer, or by the buyer to the seller. Thus the king allows one pound draught for goods which weigh not less than one cwt. ; 2lbs. for such as weigh between 1 and 2 cwt. ; 3lbs. for those between 2 and 3 cwt. ; 4lbs. for those from 3 to 10 cwt. ; 7lbs. for those from 10 to 18 cwt. ; and 9lbs. for those from 18 cwt. upwards.

Draught, or Draft. See **BILL.**

Draught, in rural economy. See **HORSE**, and **Ox.**

DRAWBACK, in commerce, a certain duty, of the customs or excise, allowed either upon the exportation of some of our own manufactures, such as glass ; or upon certain foreign merchandize, such as sugar, on which a duty has been previously paid.

DRAWING, an art which consists in justly representing the appearances

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of objects upon paper, or any plain surface, by means of lines and shades, formed with certain colouring materials adapted to the purpose.

The art of drawing is an elegant amusement, and now forms one of the polite accomplishments taught in our schools. How superior such an amusement is to the many silly ones with which some persons amongst us are still content to be pleased, we scarcely need observe !

DRAW-NET, a kind of net for taking the larger species of wild-fowl. It is usually made of the best pack-thread, with wide meshes ; it is about twelve feet deep, and six long, having a strong cord at each side, and stretched at each end by long poles. Draw-nets should be spread smooth and flat on the ground, and strewed over with sedge, grass, &c. The sportsman should also be hidden from the sight of the birds.

DREAM, a succession of ideas more or less vivid, often incoherent and wild, which arise in the mind during sleep.

Dreams have excited the attention of mankind in all ages ; and to the weak and superstitious, have been sometimes productive of very unpleasant consequences. It will be found, however, upon an accurate attention to the operations of the human mind, that dreams are the mere repetition of the ideas, or images which it has previously received, frequently distorted, it is true, but still the outlines or occasion of most dreams may be traced to the previous thoughts or actions, and chiefly to the thoughts and actions of the day preceding the night on which the dream occurs. Exceptions will, doubtless, occasionally offer ; but the general result will be found, upon accurate experiment, to be correct. The absurdity, therefore, of paying any attention to dreams is evident.

Dreams often arise from a disturbed state of the bodily or mental functions ; hence the necessity of attending to the general health, and of keeping the mind quiet, in order to avoid trouble-

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some dreams, and disturbed repose. To this end nothing more contributes than light suppers, and a regular habit of going early to bed.

DREDGING, a term used to express an important operation in the practice of the engineer, that of removing mud and other deposited matters, from the bed of rivers, canals, harbours, and basins.

The *spoon dredging-boat* is one of the chief apparatus for this work. But the most powerful of all, is that called the *bucket dredging-machine*. It was first worked by men; then by horses; but now it is generally worked by the power of steam. One of these machines in good order, with a steam-engine of 12 or 15 horse power, on a vessel of 100 or 120 tons, with two or more receiving boats, in a situation sheltered from the swell of the sea, and in not more than two fathoms depth of water, will lift about forty tons of stones, mud, or other matter per hour!

DRENCHES, or **DRINKS**, are liquid medicines given to horses and cattle. When it is necessary that any medicine should operate speedily, as in colic and gripes, a drench is the best form in which it can be given. Drenches are best given by means of a bullock's horn, the large end cut in the form of a spout. In giving a drench the tongue is to be held down with the left hand, and the head being moderately elevated, it is to be poured down the throat; the head is to be kept in this position till the drench is swallowed; but if the animal happen to cough, while the drench is in his throat, the head should be immediately held down. *Cordial* drenches may be given in ale, but on other occasions, water, or gruel, is the best vehicle. When the throat is inflamed and sore, it is not advisable to give drenches.

DRESS, the clothing of the body.

Dress has in all ages, and amongst all civilized nations, attracted considerable attention, particularly among the females, but that attention has been, too commonly, applied to the form and fashion of clothing, rather than to its

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convenience, or to its utility as a preserver of health. Nor at the present time, with all our improvement in the arts, does our dress evince much of that wisdom, which the diffused information of the nineteenth century persuades us must be abroad.

The first thing necessary in dress is, to take care that it be suited to the climate, and the season of the year; although different habits and customs will, no doubt, considerably influence the dress of different persons. The young and vigorous will require less clothing than the old and infirm.

The dress should not only be suited to the season of the year, but also to the habits and mode of life. A person who is engaged in a sedentary employment, will always require more clothing than one who is actively engaged in manual, or other labour, requiring considerable muscular exertion. The changes of dress, however, ought, in every instance, to be made with extreme caution: persons advancing in life cannot vary their dress in any way, with that ease with which young people can.

Dress is often injurious in consequence of its being made *fashionable*, frequently compressing the intestines, and exposing the bosoms of females, by which means the foundation of many incurable diseases is continually laid, and which no after treatment can possibly remove. At the present time, with an apparent freedom from compression, the ladies wear such improper stays, that the miracle would be, not that they are complaining, but that they should be free from complaint; and in this respect, the gentlemen seem to have followed the ladies, in that unfortunate fashion for tight lacing of their waists, which is an indication of any thing but common sense: surely, such distortions of the male figure cannot long continue in fashion in this country!

Perhaps there is no part of the dress of either sex, in which such impropriety and absurdity is displayed, as in that of the shoe and boot. Notwithstanding almost every person is com-

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plaining of *corns*, yet, one would suppose, that the simple remedy of *soft and easy shoes and boots*, had never been heard of. High heels for the ladies, have been for some time discarded: one should hardly have thought, that in the nineteenth century, they would be transferred to the gentleman's boot! No one needs to be told that it is impossible to walk either with ease or grace on high heels.

All tight bandages on every part of the body, are highly improper; whether at the neck, the wrist, the knees, or around the body.

The best dress is, doubtless, that which keeps the body sufficiently warm to produce a sensation of comfort, and which at the same time, is perfectly easy and clean. There can be no necessity for our describing each separate article of dress; but as a whole, the dress of the people called Quakers, has been recommended, as being easy, neat, clean, and often elegant, with little that is superfluous; we do not, however, perceive the necessity for either the ladies or gentlemen, to confine themselves to certain colours, or indeed to certain and uniform shapes of clothing: from such prim precision, nature herself turns away; and to a latitudinarian ease in this respect, we certainly see no objection.

Persons will, no doubt, in many instances, be governed as to the kind of clothing, by their sensations, the climate, the season of the year, the period of life, and also by their constitutions: it will be generally found, that strong and robust persons can endure many changes of temperature without any change in dress, with impunity, whilst the valetudinarian will be obliged to vary it most attentively, according to the fluctuation of the weather, or a change of climate, or of the season.

In a word, every person, with the exercise of a little common sense, will soon discover the most agreeable mode of dress for his ease, comfort, and health, and if he can be also in the fashion at the same time, to this there are no solid objections; but further than

this, fashion in dress, either by ladies or gentlemen, ought not to be followed.

We may, in concluding this article, just observe, that *fashion* has introduced the wearing of a flannel waistcoat next the skin: and with valetudinarians the fashion is not a bad one; but we very much doubt whether the indiscriminate wearing of this article of clothing should be recommended, especially to the young. If, indeed, delicate females would adopt the practice of covering that part of their bosoms with flannel, which they now too commonly expose, we should applaud them. At any rate, if flannel waistcoats be worn, there is no necessity in every instance, and upon all occasions, that they should be next to the skin.

Clothing is warm in proportion as the article of which it is composed is a bad conductor of heat: thus wool is warmer than cotton, cotton than linen, and linen than silk. Colour has also some influence on the warmth of dress. Black will be found the warmest of colours, and white the coolest.

DRILLING, a method of sowing grain in regular rows, by machines invented for the purpose.

The drilling of grain is no new discovery: it has been practised from time immemorial in the East Indies; and has been long known in Spain. Its introduction into this country, is justly attributed to the celebrated **TULL**.

In the construction of all implements for drilling, the greatest attention should be paid to have them as simple in their mechanism as possible, in order that they may be used by persons of very moderate capacities. Various instruments of this kind are in use in different parts of the island; amongst which, those invented, or improved by **Mr. TULL**, **Mr. AMOS**, **Dr. DARWIN**, **Mr. COOK**, **Mr. DUCKET**, and **Mr. WILLARD**, have had their advocates. For sowing turnips, a useful instrument of this kind has been contrived by **Mr. BAILEY**, and another by the same gentleman, for sowing other kinds of grain, is said to have consider-

able merit. A recent invention of a *drill-barrow*, peculiarly well calculated for small farms, is very simple, and may be used in two ways: either a box or barrow is attached to the plough, by which the seed is deposited in the furrow as the plough goes along, and it is covered by the next furrow-slice;—or a boy, with a barrow, follows the plough, depositing the seed in the bottom of the furrow. The advantages of this machine are, that the seed being deposited at a proper and equal depth, takes fast and equal hold of the ground, nor is it affected by winter or spring frosts; it takes firmer root; the seed may be deposited in a windy day; any weeds growing between the rows can be completely extirpated; and there are no means by which clover can be sown with winter wheat in the spring, to greater advantage, as the intervals between the drills can be hoed twice, and the clover-seed sown on a clean pulverized bed.

With respect to the different kinds of corn which is best suited for the drill-husbandry, there is no question that leguminous crops, such as beans, pease, &c., are best calculated for it. Beans should be drilled not only on loamy soils, but even on strong and rich clays. Drilling for turnips is likewise greatly to be preferred. Potatoes, also, ought to be planted in rows by all farmers, whatever plan gardeners or cottagers may adopt. There ought to be a distance of from 20 to 30 inches between each row. The drilling of carrots has not been found to answer in Suffolk, but has succeeded in Scotland.

In regard to pease, when sown with a mixture of beans, drilling is to be preferred to broadcast. The rows ought to be from 20 to 27 inches asunder, and the intervals repeatedly hand-hoed. As to tares, (although generally sown broadcast) when drilled they should be sown fifteen inches apart.

With respect to drilling culmiferous crops, that is, wheat, barley, rye, &c., a considerable difference of opinion prevails. But on a careful considera-

tion of the arguments which have been advanced, for and against the practice, we think that on the whole, the drilling of culmiferous crops, where it is conducted with skill and attention, is a practice to be approved of. The great question at issue is, whether it be equally applicable to rich, soft, and moist soils, as it is to those of a poorer, harder, and drier quality, where a power to work the soil, and to render it friable, is of peculiar importance. Additional experiments are, however, necessary to decide this point.

DRINK, the liquid which we take to quench thirst, and, of course, to support the bodily functions.

The fluid necessary to be taken for the preservation of good health, has been calculated at double the quantity of solid provisions which we daily consume. But this proportion is frequently exceeded, sometimes from the solicitations of nature, although more commonly to gratify the cravings of a vitiated palate. In the summer season, as we all know, the body requires more liquid aliment than in the colder seasons of the year: and for simply quenching of thirst, nothing equals pure **WATER**, care, however, being taken not to drink it cold when the body is unduly heated. See the next article.

Persons, whose appetite is not depraved by irregular living, may easily regulate the due proportion of their drink to that of dry aliment: for with them thirst will be the safest guide. But those individuals who have unfortunately become the slaves of Bacchus, are generally deprived of this beneficent instinct.

If the moral sense be so far lost in the habitual votary of dissipation, that he is no longer deterred from the gross vice of intoxication, yet he ought to know that his bodily functions will sooner or later convince him of his error, and that he cannot *live fast* without at length suffering various lingering diseases, and distressing mental maladies, for which he will, it is to be feared, seek in vain for a cure.

Large potations of fermented liquors

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are at no times advisable ; and least of all so to those whose exercise is not of the most active and laborious kind.

DRINKING COLD WATER, or cold liquors of any kind in warm weather, or when heated by exercise, or otherwise, may be productive of fatal effects ; to guard against which, avoid drinking while warm, or drink only a small quantity at once, and let it remain a short time in the mouth before swallowing it ; or wash the hands and face, and rinse the mouth with cold water before drinking. If these precautions have been neglected, and the disorder incident to drinking cold water has been produced, the first, and in most instances the only remedy to be administered, is sixty drops of liquid laudanum in spirit, or water, or warm drink of any kind. If this should fail of giving relief, the same quantity may be given twenty minutes afterwards.

When laudanum cannot be obtained, rum and water, or warm water should be given.

Vomiting, or bleeding should not be had recourse to without consulting a physician.

Half an ounce of camphor, dissolved in a gill of brandy, and given in three parts at intervals of three or four minutes each, has been given with success by Dr. A. WHITE, of New York, as a remedy for the alarming symptoms which sometimes occur in drinking cold water when in a state of perspiration. Of this we can only say, that it is a very powerful medicine, and that nothing but the utmost extremity ought to induce us to have recourse to it.

Dromedary. See CAMEL.

Dracon. See BEE.

DROP, the name of a vague species of measure, so called because the liquid is dropped from the mouth of a bottle. The quantity of a drop should be one grain, sixty drops being a fluidrachm. As, however, the quantity of a drop depends upon the consistence of the liquid, and upon the size of the mouth of the bottle from which it is dropped, the London College of Physicians call the sixtieth part of a fluidrachm a

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MINIM ; and glass tubes, graduated for the purpose of measuring minims, may now be purchased at the glass shops. See APOTHECARIES' WEIGHT. We frequently in our work use the old term drop ; when we do so, the reader will not forget that by it we mean one grain, or the sixtieth part of a fluidrachm. We advise, however, every family prescriber to procure a minim measure.

DROPSY, a disease in which there is a collection of water in the cellular membrane, either over the whole body, or affecting only particular parts. It is generally accompanied with more or less swelling of the limbs, belly, face, &c. A dropsy of the chest is called *Hydrothorax* ; of the whole body, *Anasarca* ; and of the belly, *Ascites*. They are all attended with considerable shortness of breath ; and if water be in the abdomen, a sense of fluctuation can generally be felt ; and are commonly the consequence of some previous disorder, or irregularity. They are also children of the same family, debility.

In these complaints the domestic prescriber will hardly venture to rely upon his own judgment, or on the directions which he can obtain from books : when therefore a patient is attacked with this disease, the safest course is to apply, as soon as possible, to an experienced physician, or other medical practitioner.

In *hydrothorax*, we have seen very good effects from elaterium and foxglove, with large doses of opium given afterwards to allay the irritation which the elaterium produces.

And in a case of *anasarca*, very good effects were produced by the following singular, but very simple, remedy : one quart of boiling water was poured on five ounces of bohea tea ; the whole of this strong tea was drank at intervals during one day ; and all the leaves of the tea were eaten in the course of three days afterwards. The patient was a woman about forty years of age, with a child 5 months' old at the breast ; in less than a week after the taking of this remedy the swelling of her legs and feet subsided, the shortness of breath went

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off, and the appetite became good ; in short, the woman was cured. We ought to observe, that this was a very recent complaint.

The *ascites*, is rarely, if ever, relieved without tapping, and as this is an operation more immediately within the province of the surgeon, it is less necessary to enlarge upon it here : it often relieves the patient for a time ; is sometimes fatal ; and occasionally, but rarely, effects a complete cure.

As, however, dropsies are accompanied with various symptoms of debility, the food and drink which are taken demand particular attention ; and keeping the bowels regular by laxative pills will also be highly necessary. What is said under ALIMENT, APPETITE, and DYSPERSIA, should be carefully attended to.

Muscular exercise, if it can be borne, and riding on horse-back, with considerable motion of the body, may often prove advantageous ; so also will repeated frictions of the parts affected.

For allaying the thirst attendant on this complaint, the juice of lemons and oranges, or water acidulated with any of the vegetable acids, will be found advantageous. To refuse patients in this disease the gratification of quenching their thirst by moderate portions of suitable liquid, is both cruel and improper.

The tepid bath has sometimes procured considerable relief ; diuretics are also useful, and warm clothing ; flannel next the skin, is particularly desirable, to keep up and encourage the discharge of moisture from the surface of the body.

DROPSY of the BRAIN, or *Hydrocephalus*, sometimes called also *Hydrocephalic apoplexy*, consists of a collection of water in the ventricles of the brain. This disease more commonly attacks children, yet it sometimes occurs in adults.

Children who are seized with this disease, complain first of a pain in some part below the head ; most commonly about the nape of the neck and shoulders ; often in the legs ; and occasionally in the arms. The pain is not always

acute, but frequently wanders from one place to another ; in a few days acute and deep-seated pains extend across the forehead from temple to temple, of which and a sickness they alternately complain ; dosing a little in the intervals ; the breathing is also very irregular ; an obstinate costiveness is also peculiar to this complaint. As the disease advances the pulse becomes slow and irregular, till within a day or two of the fatal termination of the disorder, when it becomes exceeding quick ; the breathing, also, being at the same time deep, irregular, and laborious : at first the heat of the body is for the most part temperate, but it increases with the increasing quickness of the pulse. The head and the præcordia are always hot from the first attack. The sleeps are short and disturbed, interrupted with watchfulness and startings. In the first stage of the disease the eyes cannot bear the light, but in the progress of it the pupil is remarkably dilated, and cannot be made to contract even by the strongest light. One or both hands are most commonly about the head ; the urine and stools come away insensibly ; the pulse increases in its trembling undulations beyond the possibility of counting, and convulsions often close the scene.

Till of late years this disorder was reckoned totally incurable, and although some cases have occurred where the use of mercury has been successful, yet in others it has totally failed. Few parents or friends would choose to trust the management of such a serious complaint to a domestic prescriber, and therefore in this disease the best advice we can give, is to consult an experienced physician.

It may be opportune here to observe, that whenever a child has a swelling of the belly, and costiveness, with more or less stupor, and protuberance of the ball of the eye, even although no other symptoms be present, it will be extremely wise to evacuate the bowels, and to keep them soluble ; to regulate its diet, and to take every means by friction, exercise, clothing, tepid bathing, &c. to promote the general health.

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We believe, if these indications were seasonably attended to, that many unpleasant diseases would be prevented, and often, most probably, in children, the dropsy of the brain. Young children if they are old enough to speak, do not frequently complain, even under much bodily inconvenience, and therefore their appearance and symptoms should be watched with more care. See INFANCY.

DROPSY in HORSES is, as in the human subject, of different kinds.

The best internal remedies in the dropsies of horses are diuretics: and the bowels should of course be kept regularly open.

Colts are subject to a dangerous kind of dropsy, which begins at the sheath, and extends to the belly and chest. On the commencement of this disease, bleeding is generally proper, especially if the pulse be quick, and the membrane under the eye-lid unusually red. If a buffy coat appear on the blood, and the symptoms after bleeding do not abate, the bleeding should be repeated. When the swellings become troublesome on account of their weight, they should be scarified by the common horse lancet, which may be plunged to the depth of nearly half an inch into several places, choosing the most depending parts. Mild diuretics should also be given now and then to keep up an increased discharge of urine. His drink should be oatmeal mixed with water; and he may eat carrots, lucerne, vetches, or a small quantity of oats now and then. If he be weak, tonic medicines are proper.

For *Dropsy of the brain*, in horses, see BRAIN.

Dropsy of the chest, in horses, is a consequence of inflammation of the lungs, and is generally an incurable disease. Diuretics, tonics, nourishing diet, and blistering the sides, promise the most service. A horse was once tapped for this complaint, but he soon after died.

In the *dropsy of the belly of horses*, the external swellings may be scarified as mentioned above; but the more important disease will remain until proper

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internal medicines are given. The following, as a diuretic, will be of great service: Take of Castile soap two ounces; dissolve it in a pint of good strong beer; then add of powdered cascarilla bark two drachms; powdered ginger three drachms; oil of juniper two drachms, or balsam of capiva one ounce: mix for one dose. Frequent and strong frictions of the skin, with warm clothing and exercise, should not be omitted.

DROPWORT, or *Spiræa*, a genus of plants consisting of twenty two species, the greater number shrubby, the rest herbaceous; chiefly natives of Europe and North America; three or four common to our own country; the following are cultivated: the *salicifolia*, or willow-leaved spiræa, of which not less than four varieties are found wild in our wet woods; the *tomentosa*, or Scarlet spiræa; the *hypericifolia*; the *argentea*; the *chamædrifolia*; the *crenata*; the *triloba*; the *opulifolia*; the *aruncus*; the *filipendula*, or common Dropwort, found wild in our pastures; the *ulmaria*, or Meadow-sweet, found wild also in our meadows; and the *trifoliata*.

All the shrubby sorts may be propagated by cuttings, suckers, or layers; the herbaceous may be increased by seeds, or parting the roots: the double flowered can only be preserved by the last method.

DROPWORT, the **WATER**, or *Oenanthe*, a genus of plants containing eleven species, chiefly Cape plants; a few indigenous to the south of Europe, and four natives of the ditches and marshes of our own country.

Of these last, the most remarkable is the *Crocata*, or **HEMLOCK DROPWORT**, with a tuberous root, growing in ditches and other moist places; it has pinnated leaves resembling those of celery or chervil, and ribbed stalks. Its roots afford the easiest mark of distinction, which are white, thick, and short, and grow several together, forming a kind of bunch. The whole of this plant is an active poison; the stalk has been eaten for wild celery, and

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produce death in a very short time. The root has been also eaten by mistake for water parsnip, and with the same fatal consequences. The juice is, however, said to be an efficacious remedy when cautiously exhibited, for inveterate scorbutic eruptions; but we do not advise our readers to make any experiments with it.

If any part of this plant should be eaten by mistake, immediate bleeding and vomiting has been found the best remedy.

DROWNING, an immersion in water, by which life becomes apparently extinct.

As many accidents of this kind occur in consequence of bathing and swimming, before we treat of the recovery of drowned persons, the following observations and precautions should be particularly attended to by every one; and parents and heads of families cannot be too circumspect in impressing them upon the attention of all young persons whom they have under their care.

In the first place, one of the best preventives of drowning is the being able to swim; at the same time this art should be learnt with extreme caution, and under the care and direction of those who can swim well; it is a mistake, however, to suppose that deep water is necessary for learning to swim; an adult five feet eight inches in height, can learn to swim very well in water only four feet deep; and boys, of course, in much shallower water. See **SWIMMING**.

In all accidents in the water it should be constantly remembered, that the living human body is generally lighter than even fresh water, and that a very moderate exertion will enable a person to keep his head above it; this kind of exertion is best learnt by noticing the motions of an expert swimmer, better than by any verbal directions. But these exertions should not be performed with hurry, since they are themselves fatiguing, and much more so if performed with impetuosity. The water of the sea is much heavier than fresh water;

and it is no uncommon thing for expert swimmers to lie motionless on it, and even support considerable weights. Mr. KNIGHT SPENCER, of the Surrey Institution, was supported on the surface of the sea, at Brighton, *without the least motion*, with a pair of heavy shoes weighing three pounds and a half, his own clothes five pounds, and stones in each hand weighing six pounds two ounces, making together fourteen pounds ten ounces: he was so much at his ease as to converse with his friends on the beach.

Be very careful where you bathe, notwithstanding you swim ever so well, lest there should be weeds, or any thing else to entangle your feet. For the same reason, in plunging into the water, you should be careful that there are no hidden stones or stakes, as striking against these may prove very injurious or even fatal.

Do not expose yourself to danger in any way unnecessarily; whether it be by walking on the sides of boats, plunging off heights into the water; playing on the banks of rivers or other deep waters, nor by sailing in a boat, except in the company of some experienced person, or unless you are well skilled in the management of your vessel; nor should you venture on the ice until you are perfectly assured that it is sufficiently strong to bear you.

If, however, after all your care, you should *fall into the water*, or by any other means *get out of your depth*, and you cannot swim, impressed with the truth that you are *lighter than water*, avoid all violent action, and calmly and steadily strive to refrain from drawing in your breath whilst under the water; and keep your head raised as much as you can, and gently and constantly move your hands and feet, *in the water*, and not *out of it*, in a proper direction, and there may be a great probability of your keeping afloat until some assistance arrives. **PRESENCE OF MIND** is of the utmost consequence in such imminent danger, and although it is not easy to preserve it in such situations, yet the knowing that the possession of it will

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the better enable you to overcome the accident, such a disposition in all extraordinary conjunctures, should be cultivated and encouraged. In such accidents, too, the necessity of *keeping your hands down in the water* cannot be too strongly impressed on the mind.

If you should be present when a person is in danger of drowning, and can make him hear you, take care to repeat the injunction of *keep your hands down in the water* until assistance comes; in the mean time be as active as possible in throwing towards him a rope, or a pole, or any thing which may help to bring him to the shore or other place of safety. If you can swim, you may sometimes be of still more service; but such assistance is always hazardous; the best manner of laying hold of a person whom you wish to save from sinking, is firmly to grasp his arm, between the shoulder and the elbow; this will prevent him from clasping you in his arms, by which he would force you under water, and perhaps cause you to sink with him.

If it be in the winter, and a person has fallen through the ice, in this, as in the preceding case, a rope, or pole, will be of great service, if the person can support himself by hanging on the ice till aid is procured; but better than all would be a ladder, which might be easily slid across the hole, and thus furnish the poor sufferer with the best of help. On the shores of waters much frequented by skaters, it would be very useful to have a ladder or two kept in readiness at some near and convenient place. These ladders might be lighter and broader than common ladders.

When, however, the body cannot be prevented from sinking, we must by no means despair: several methods and instruments have been contrived to search for and take it up. The most common instrument is the drag, like those which plasterers use for making hair mortar. This, however, being sharp at the points, is not so proper to raise those bodies which are naked as those which are clothed, as there is danger in the former case of tearing the

flesh. To remedy this, and increase the chance of finding the body, Dr. Cogan invented two new drags, one of which is a simple drag with a long pole for a handle, the other is what the Dr. calls a triangular drag, to be managed by a rope at the upper end, while a cord, with a piece of wood to float, is fastened to the lower end for the purpose of setting the drag at liberty should it become entangled, or otherwise regulating its use. Each of these drags is so formed, that instead of having a sharp point at the end to pierce the body, it may either have a sort of knob or rising or a hooked point, so that it may be applied equally well either to a naked or to a clothed body. The triangular drag is made with a socket at the upper end, that a pole may be put in to work it by, instead of a rope, whenever it is thought preferable. A boat and two drags, either simple or triangular, or one of each, will be sufficient to bring up any body in ordinary rivers.

In large and deep rivers, however, such as the Thames, it is often necessary to have recourse to other means of search. A *drag-net* has been contrived by Mr. PHELPS, of Fulham; and an improved apparatus by Mr. MILLER, of Bedford Square; both these inventions are very ingenious and useful. The drag-net is forty yards in length, and about fifteen in width; the meshes are about seven inches from angle to angle. Pieces of lead are affixed to the bottom at equal distances; and the top part is kept floating by pieces of cork. The proportion between the lead and the cork is so well adjusted, that it sweeps the bottom most closely, preserves, at the same time, its perpendicular direction, and thus infallibly brings up any body, whether floating in, or lying at the bottom of the river within the space over which it passes.

We have not room to describe Mr. MILLER's apparatus; but those who are desirous of understanding it, will find it described, with a plate, in an excellent little work by Mr. BOSWORTH, entitled, "*Accidents of Human Life*."

Having made these preliminary and

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essential observations, we now proceed to state the most approved means of treating those persons who are apparently dead from drowning; and with which means it is the duty of every person to make himself acquainted, as accidents may occur where proper advice may be of the utmost importance, and where the life of a fellow creature often depends upon its being promptly and judiciously given.

The cause of the extinction of life, by drowning, has been satisfactorily demonstrated to arise, not from the entrance of water into the lungs; a very small quantity only of that fluid entering them, during the efforts to inspire, in the act of drowning, but by the exclusion of the atmospheric air, and afterwards, as a secondary effect, by the abstraction of the natural warmth of the body. Hence, in order to restore the suspended animation of a person who has been drowned, an exposure to atmospheric air is essentially necessary, then a restoration of the process of breathing, and, as soon as possible, too, the natural warmth.

As it is incontestably proved, that a person may remain a long time in the water without life becoming absolutely extinct, it is necessary to administer the succours which we are about to prescribe, however hopeless the case may appear: for it is a vulgar and dangerous error, to suppose that persons are irrecoverable, because they might have been some time in the water, or because life does not soon make its appearance after their removal from it. This opinion has consigned to the grave an immense number of the seemingly dead, who might have been restored to life by resolution and perseverance.

If being dangerous to lose a moment in this accident, the treatment should be begun the instant the body is taken out of the water, when the wet clothes, if the person be not previously naked, must be taken off with all possible expedition on the spot, the body wiped dry,—(unless some convenient house is very near), and a great coat or two, or

some blankets, should be wrapped round it.

The patient is to be thus carefully conveyed, in any vehicle which can be procured, lying upon straw, or on a mattress, in as natural and easy a position as possible, to the nearest public or other house, where a good fire, if in the winter season, and a warm bed can be made ready for its reception. As the body is conveying to this place, the head should be uncovered, and a little raised, and the body be rather inclined to the side. When no other vehicle can be obtained, the body must be carried in the arms of three or more persons.

In removing the body to a convenient place, great care must be taken that it be not bruised, nor shaken violently, nor roughly handled, nor carried over the shoulders with the head hanging downwards, nor rolled on the ground, &c. These methods, formerly resorted to, with the view of causing the water to flow out of the stomach, are not only useless, but injurious, and often destroy the small remains of life.

In cold, or moist weather, the patient is to be laid on a mattress, or bed, before the fire, but not too near; or in a moderately heated room; in warm and sultry weather, on a bed only. The body is then to be wrapped, as expeditiously as possible, in a blanket, and thoroughly dried with warm coarse cloths, or flannels. It should be laid on the right side, with the head and shoulders raised in a small degree; the mouth may be opened to allow the discharge of any fluid which may be left therein.

In summer, or sultry weather, too much air cannot be admitted. The windows or doors of the room should be left open, and no more persons admitted into it than what are absolutely necessary; more than six will be an incumbrance, and contribute to vitiate the air, upon the purity and inhalation of which resuscitation principally depends.

Great care must also be taken that the body be not heated too suddenly.

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The warmth promising most success, is that of a bed or blanket, properly warmed. Bladders, or bottles of warm water, should be laid upon the stomach, at the bottom of the feet, in the joints of the knee, and under the armpits; and a warming-pan moderately heated, hot bricks wrapped in cloths, or bags of hot ashes, or sand, should be rubbed over the body, particularly in the direction of the spine.

The natural and kindly warmth of a healthy person, lying by the side of the body, has been, in some cases, particularly of children, very efficacious. The shirt or clothes of an attendant, or the skin of a sheep fresh killed, may be also used with advantage.

Should the accident happen in the neighbourhood of a warm-bath, brew-house, bake-house, glass-house, salters, soap-boilers, or any place where warm lees, ashes, grains, sand, water, &c. can be easily procured, it would be of the utmost service to place the body in any of these, moderated to a degree of heat very little exceeding that of a healthy person.

Various stimulating methods should be also employed. Volatile salts, spirits of hartshorn, the fumes of burning sulphur, or other stimulating substances, should be applied to the nostrils; or they may be irritated with a feather, or other light body.

It will be proper, with a pair of bellows of the common size, by applying the pipe a little way up one nostril, to blow with some force, in order to introduce air into the lungs; at the same time, the other nostril and mouth are to be closed by one of the assistants, whilst another gently presses the chest with his hands, after the lungs are observed to be inflated. By pursuing this process, the noxious and stagnant vapours will be expelled, and the natural breathing imitated. If the pipe of the bellows be too large, the air may be blown in at the mouth, the nostrils at the same time being closed, so that it may not escape that way. But the lungs are more easily filled, and the natural breathing better imitated by

blowing up the nostril. Or the method for introducing air into the lungs may be adopted, as mentioned under the article CHARCOAL.

General frictions should be employed with warm flannels, a dry brush, or the hand, in order to increase the warmth of the body, and subsequently, when the lungs have been successfully inflated for some time, as a means of assisting the circulation of the blood; after employing these frictions, we may steep a flannel in camphorated spirits, vinegar, &c.

When neither bellows nor other apparatus can be had, it will be highly proper to endeavour to excite the natural breathing by pressure on the breast, ribs, and lower part of the belly, merely by the hands, so as to press out as large a portion of the internal air as possible; and then *removing* and *applying* the pressure alternately, in order to imitate the natural breathing and promote the introduction of atmospheric air. This method of exciting the lungs to action, has in many cases of drowning been attended with success.

In some instances, agitation of the body, particularly of children, during the other resuscitative processes, has been of advantage; in those, frequent and long-continued agitation of their legs and arms, has been more immediately beneficial.

A clyster, prepared with four ounces of common salt, and a pint of warm water, or three parts of water and one of vinegar, may be administered. Or a pint or more of water, with the addition of one or two spoonfuls of spirit of hartshorn, a heaped spoonful of mustard, a table-spoonful of essence of peppermint, or two ounces of either ruin, brandy, or gin, may be added, or the warm water may be given alone as a clyster. This step, however, need not be taken until artificial respiration has begun.

Neither injection of the smoke of tobacco, nor clysters of that plant, although recommended by some persons, are of any use, but may prove deleterious.

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If the patient remain senseless, his face red, livid, or black, and his limbs warm and flexible, he ought to be bled in the foot, or, which is better, in the jugular vein; but if the body be cold, and the limbs stiff, this remedy must by no means be had recourse to.

If there be signs of returning life, such as sighing, gasping, twitching, convulsive motions, &c., little lighted pieces of cork, liven, or paper, should be placed upon the pit of the stomach, the arms and thighs; a spoonful of any warm liquid may also be given; and if the act of swallowing can be performed, a cordial of brandy or wine may be given in small quantities, and frequently repeated. Before the act of swallowing is restored, warm negus, or water with the addition of a little spirit of harts-horn, may be introduced into the stomach by means of a syringe and the flexible tube, mentioned under the article CHARCOAL, for inflating the lungs.

When the patient is so far recovered as to be able to swallow freely, he should be put into a warm bed, with his head and shoulders somewhat raised by means of pillows. Warm wine, whey, ale posset, or other light and moderately nourishing food, should now be given; and gentle perspirations promoted by wrapping the feet and legs in flannels well wrung out of warm water.

Electricity may be tried by the judicious and skilful, as its application neither prevents nor retards the various modes of recovery already mentioned; indeed, in the hands of the faculty, this, as well as Galvanism, promises new powers for the restoration of persons whose animation has been suspended, not only by drowning, but by various other means. See GALVANISM, and SUSPENSION BY THE CORD.

To conclude this important subject, the unfortunate object of our care ought not to be abandoned until there remains no doubt whatever, that life is quite extinct. The methods which have been described are to be employed with vigour for many hours, although no favourable symptoms should appear. And let this conviction remain firmly

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on the mind, that *after the lapse of eight or ten hours, from the period of the accident, animation has been, and may, possibly, be restored.*

DRUG, an ingredient used in physic. We have, throughout the present work, described a variety of drugs of greater or less moment in the art of healing. We must not forget, however, that specifics in the cure of diseases are rarely to be found: indeed, except sulphur for the cure of the itch, we scarcely know one; and that as the knowledge of the healing art advances, and is diffused, the articles in our materia medica will become, most probably, considerably circumscribed. Even at the present time, the most energetic and able practitioners, use comparatively few drugs; and if neither interest nor fashion interfered in their administration, there can scarcely be a doubt, but that the number would be still further reduced.

DRUNKENNESS, a well-known affection of the brain, occasioned by drinking too freely of intoxicating liquors. Drunkenness appears in different shapes in different individuals: some it makes gay, some sullen, and some furious.

Drunkenness betrays men into extravagancies of anger, or sins of lewdness; it disqualifies them for the duties of their station, both by the temporary derangement of their faculties, and at length, by a constant incapacity and stupefaction; it is attended with expenses, which can often ill be spared; besides the remorse which almost uniformly attends the mind of the drunkard in his cool moments, it occasions uneasiness and pain to his family; it generally shortens life. To these consequences may be added, the peculiar danger and mischief of the example.

Occasional exemptions from some of these mischiefs are found; but an exemption from some kind of mischief occasioned by drunkenness, we know not one; and, therefore, should any person, addicted to this disgusting vice, think himself secure from its more usual concomitants, we would address

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him thus: although the waste of time or money, may be of small importance to you, it may be of the utmost to some one or other whom your society or example corrupts; repeated or long-continued excesses which hurt not your health, may be fatal to your companion; although you have neither wife, nor child, nor parent, to lament your absence from home, or expect your return to it with terror, other families, whose husbands, and fathers, have been tempted to share in your ebriety, or encouraged to imitate it, may justly lay their misery or ruin at your door, and this will be equally true, whether the person seduced, be seduced immediately by you, or whether the vice be propagated from you to him, through several intermediate examples.

Drunkenness, by our laws, is an aggravation rather than an excuse for any crime. For the offence of drunkenness, a person may be punished in the ecclesiastical court, as well as by statute; and he who is guilty of any crime through his own voluntary drunkenness, is liable to be punished for it, as if he had been sober. A person convicted of drunkenness, incurs a penalty of five shillings, or in case of non-payment, to be set in the stocks; and those guilty of it a second time, may be bound in a certain sum for their good behaviour.

DRY-ROT, a disease incident to timber, in which it loses its natural qualities, becomes of a colour more or less dark, and is literally rotten.

The cause of the dry-rot has been generally attributed to those fungous plants called *boletus lachrymans*, which it is said will only grow in a close confined atmosphere, without any access of light; the oxygen of the common air, and especially when extricated by the contact of light, destroying them by its stimulus. Such are constantly found in dark cellars, and damp rooms long shut up, and excluded from light and air. We suspect, however, that the effect is mistaken for the cause. Seclusion from light and air, the presence of moisture, and a certain degree of temperature, usually, we believe, from forty to

fifty degrees of Fahrenheit's thermometer, are the fruitful parents of this disease; excessive heat, and excessive cold, are both preventives of the dry-rot; at least, it does not often take place in either of these temperatures. It appears that cellars in houses, and the holds of ships, are most liable to it.

A variety of expedients have been recommended for the prevention of this rotting disposition of wood. The best is, no doubt, that which impregnates the wood with matter, which is in its own nature indestructible, and which will impart its qualities to the wood itself. Dr. Darwin advises the soaking of timber in lime-water, till it has absorbed as much as possible, and after it has become dry, to immerse it in a weak solution of vitriolic acid in water. A solution of green copperas in water has also been recommended, and is, perhaps, the best which can be used.

A bed of anchor-smiths' ashes, has been found an excellent preservative of ground-floors from the dry-rot.

Charring of the outside of joists and other timber, is also of great utility. But whenever the dry-rot has taken place, nothing short of the removal of the rotten part promises to be effectual.

In cellars, it is said that the dry-rot may be prevented, or its progress stopped, by white-washing the walls, mixing with the wash at the same time, as much green copperas as will give it a clear yellow hue: the washing should be repeated every year.

In order to prevent more effectually this disease, it has been recommended, not to fell any timber till after the fall of the leaf. This, however, we must confess is a doubtful remedy.

The following has been strongly recommended: Make a strong solution of barilla, kelp, or potash; when boiling-hot, wash the part of the wood affected with the rot; then dissolve oxide of lead, or iron, in pyroligneous acid, and twelve hours after the application of the leys, soak the wood well with this solution; lastly, wash the wood with the pyroligneous solution of lead, and

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ten or twelve hours after wash it with a strong solution of alum, in the proportion of three ounces of alum to a pint of water

Sinking a ship infested with the dry-rot, in sea-water, and letting her remain there for five or six months, is said to be a cheap, easy, and effectual remedy for it. See Transactions of the SOCIETY of ARTS, Vol. XXXVI.

Mr. M^WILLIAM has lately published an elaborate treatise on the dry-rot, which those deeply interested in its prevention or cure should peruse.

DRYING-OIL, is usually made by boiling linseed-oil with a small portion of litharge; four ounces to a gallon of the oil will generally be found sufficient. In boiling these together, care must be taken not to make the oil too hot, for, by such means, it may take fire, and much mischief may be the consequence.

DUCK, or *Anas*, a genus of birds, consisting of one hundred and eighteen species; of these some have gibbous-bills, and others are equal at the base. This genus contains not only the ducks so called, but swans, geese, teal, &c. The following are some of the chief species.

The *Cygnus*, or Wild Swan, with a black bill and white body, inhabiting Europe, Asia, and America. The *Olor*, or Tame Swan. See SWAN. The *Nigricolis*, or Black-necked Swan, of the Falkland islands. The *Atrata*, or Black Swan of Botany Bay. The *Hybrida*, or Hybrid Swan of Chili, size of a goose.

The *Cygnoides*, or Chinese Goose, inhabits Europe, Asia, and Africa; above three feet long: three varieties. The *Gambensis*, or Sparwinged Goose, inhabits Africa; size of a common Goose. The *Indica*, or Barrel-headed goose, a native of India; flesh good. The *Coscorata*, or Chili Goose. The *Melanotos*, or Black-headed Goose, a native of Coromandel; two feet nine inches long. The *Grandis*, or Great Goose of Siberia, the size of the *Cygnus*. The *Hyperborea*, or Snow Goose of Europe and North America; thirty-two inches long; flies in vast flocks;

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a stupid bird. The *Picta*, or Painted Goose, a native of Statenland. The *Magellanica*, or Magellan Goose, of the Straits of Magellan. The *Antarctica*, or Antarctic Goose; two varieties. The *Variegata*, or Variegated Goose of New Zealand. The *Leucoptera*, or Bustard-goose, of the Falkland islands; flesh good; from thirty-two to forty inches long. The *Cinerea*, or Loggerhead Goose of the same island; flesh rancid. The *Tadorna*, Sheldrake, or Burrough Duck, with a body variegated with white and black; inhabits Europe and Asia; flesh rancid; eggs good. The *Spectabilis*, or Grey-headed Duck; the *Fusca*, or Velvet duck; the *Nigra*, or Black Diver, all found in Europe and America. The *Regia*, or Royal Duck of Chili. The *Nilotica*, or Nile Duck. The *Beringii*, or Bering's Island Duck, size of a goose. The *Albifrons*, or White-fronted Goose. The above are all which are known to have the bill gibbous at the base.

Those whose bills are equal at the base, are too numerous to be individually recapitulated; the following are the chief.

The *Marila*, or Scaup Duck; black; belly, and spots on the wings, white; found in Europe, North America, and Asia. The *Segetum*, or Bean Goose, of an ash-colour; a native of Hudson's bay and the Hebrides; in Autumn comes to England in flocks, and is destructive to corn; from two and a half to three feet long. The *Erythropterus*, or Bernacle, found in Europe, and sometimes in America; found on the sea coasts of England in the winter. The *Bernicla*, or Brent Goose; brown, the head, neck, and breast black; collar white; a native of North America, Asia, and Europe; migrates southerly in Autumn: flies in wedge-shape flocks, with perpetual cackling; flesh, when tamed, good.

The *Mollissima*, or Eider Duck, found in the Northern parts of Europe, Asia, and America; length twenty-two inches: lays five greenish eggs, in a nest strewn with its own down: flesh and eggs good. The plumage conetti-

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tutes the much valued luxury called *Eider down*.

The *Clypeata*, or Shoveler, of which there are many varieties in Europe, Asia, and America. The *Formosa*, or Baikal Teal, found on the Lake Baikal. The *Clangula*, or Golden-eye, varied with black and white, head tumid, violet; inhabits Europe, Asia, and North America. The *Ferina*, Pochard, or Red-headed widgeon; two varieties; flesh good; found in Europe, Asia, and America. The *Creca*, or Common teal: three varieties; fourteen inches long; inhabits Europe and Asia.

The *Anser*, or Goose. See GOOSE.

The *Boschas*, or Common Wild Duck, is found in the lakes of different countries, and in Lincolnshire, where great numbers are taken in traps called DECOYS. The tame duck is the same, domesticated; several varieties: it is generally of an ash-colour. The middle tail feathers of the male, recurvate. The bill straight, the collar white. Varies its colours by domestication. Feeds on a great variety of different food; worms, snails, &c. The duck will cover from eleven to fifteen eggs; her time of sitting, thirty days. One drake will be sufficient for five ducks. They begin to lay in the month of February, and, unless watched, will lay abroad: on leaving the nest, they cover the eggs with leaves, or any thing within their reach.

It is advisable to let all the eggs on which a duck sits, be of one colour. During her sitting she requires a secret and safe place, but no attention whatever. On hatching, none of the ducks need be taken from her; and she may be permitted to retain them in the nest her own time. On her moving with her brood she may be cooped, if the weather be fine, upon the short grass; or under shelter, if otherwise; a wide flat dish of water, often renewed, should be placed near her; barley, or any meal, should be given as first food. The duck should be cooped at a distance from any others: a fortnight is, in general, quite long enough to con-

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fine her; and they may be sometimes permitted to enjoy the pond at the end of a week, but for a short time only, and least of all in cold weather. In rainy weather, it is useful to clip the tails of the ducklings, and the surrounding down beneath, to prevent their dragging. The straw beneath the duck should be often renewed, that the brood may have a dry and comfortable bed; and the duck herself be fed with solid corn, without an ample allowance of which, ducks are not to be reared, or kept in perfection: but in the place of corn, boiled potatoes will answer pretty well.

Duck-eggs are often hatched by hens, and where the situation is confined, and the young ducks have no access to a pond, it answers tolerably well. We do not think, however, that hatching ducks under the hen answers so well as for Pintados, or Guinea-hens. See GUINEA-HEN.

Ducks may be fattened either in confinement, with plenty of food and water, or restricted to a pond with access to as much solid food as they will eat: the last is the preferable method. A dish of mixed food, if preferred to whole corn, may remain on the bank, or rather in a shed for them. Oats are the best food for fattening them; barley by no means so good. Acorns, in season, will make them exceedingly fat, but the flesh not so delicate. They may be also fattened on butchers' offal.

DUCK'S-MEAT, DUCK-WEED, or *Lemna*, a genus of aquatic plants, consisting of six species, four of which are common to the ponds of our own country; one to the south of Europe, and one to India. They are in flower from June to September, and afford a grateful food to ducks, whence this vegetable has received its name.

DUEL, a premeditated combat between two persons, and, such is the force of fashion, they are usually attended by two other persons, called seconds.

Deliberate duelling is, by the law of England, a species of murder, and, accordingly, it charges both the

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crime and punishment of murder on the principals, and some say on the accessories. It is to be lamented, however, that no positive laws have been able to prevent the irrational and disgraceful practice of duelling; apparently the offspring of that improper mode of education, which is yet by far too prevalent in Europe, and which inculcates the notion, that brute force is capable of overthrowing the decisions of the understanding, and of compelling, as it sometimes does, apparently, assent to absurdities and falsehoods. The duels of individuals are similar to the wars of nations: in both cases, the parties are often destroyed, or physically disabled; but the reasoning faculties of the living, revolt at the barbarous brutality, and humanity drops a tear over the weakness and folly of man.

For that for which their is no reason whatever, there can be no excuse. Duelists may plead their wounded *pride*, and the phantom *honour*, but reason cannot listen to such harangues; justice cannot argue with sophistication and blood.

DUMBNESS, a privation, or want of the faculty of speech.

This unfortunate defect proceeds generally from total and native deafness; if it arise from the deficiency in the organs necessary for uttering sounds, it is always incurable. Several instances, however, have occurred of persons born dumb, who have been taught to speak distinctly; to read, write, understand arithmetic, &c.

Many philosophers, and other benevolent persons, have directed their attention to the education of the *deaf and dumb*; amongst whom Dr. WALLIS, by his papers in the *Philosophical Transactions*, and in his *Grammatica linguæ Anglicanæ*, above a century ago, and the late Mr. BRAIDWOOD of Edinburgh, in teaching the dumb to speak, deserve especial mention. In France, the Abbé l'Épée, excited considerable attention, by his success in the education of the deaf and dumb, and also by his work on the subject, first published in 1776, and afterwards much altered and improved, and repub-

lished in 1784, under the title of "*La véritable manière d'instruire les sourds et muets, confirmée par une long expérience.*" The Abbé SICARD, who was for some time the assistant, and is now the successor of the Abbé l'Épée in the *Asylum for the Deaf and Dumb* at Paris, has also published his method of instructing these unfortunates; and it appears that it is greatly to be preferred to that of the Abbé l'Épée, his predecessor.

The object of SICARD's first lessons is to teach his pupil the relation between the names of objects, and the objects themselves; the analysis of words into the letters of the alphabet; and the particular gesture which he is to attach to each word. He then explains the meaning of collective words, as distinguished from those denoting individual objects, or parts of objects. Thence he proceeds to general terms, and to generic names. And, lastly, ascends to the most general and abstract words, such as *being, thing, object*.

But, perhaps, the most important work upon this interesting subject, is that intitled *Instruction of the Deaf and Dumb*, published in 2 vols. 8vo. in 1809, by JOSEPH WATSON, LL. D. The *Asylum for the Deaf and Dumb*, established in the immediate vicinity of London, by private subscription in the year 1792, is now under the very able superintendence of this gentleman. No child is admitted on this charitable foundation, under the age of nine years: this age was not fixed upon from any idea that it was the earliest at which regular education could be advantageously begun; but *five* years being deemed, generally speaking, sufficient to accomplish that course of instruction thought most essential to such children who are destined to earn their living by labour, and *fourteen* being the earliest age at which they could be apprenticed, the economical purposes of the institution are consulted in this arrangement.

It is obvious, however, that the education of the deaf and dumb cannot commence too early. Dr. WATSON recommends, that he who undertakes

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the arduous task of teaching the deaf and dumb, should sedulously turn his attention to the study of that language termed *natural*, which consists of gesture and feature, in order to enable him to comprehend, as far as possible, the signs of his scholars, which at first, more or less, differ from one another, as they more or less resemble those signs universally intelligible. The importance of these signs will be readily apprehended, if any one will attempt either to teach or to learn a language without having another, common to both master and scholar. But never let any thing so chimerical be thought of, as an attempt to turn master to the deaf and dumb, in the art of forming signs.

We cannot pursue these observations further. Those who are more immediately interested in this subject, will consult the works to which we have referred, and more especially Dr. WATSON'S. It should not, however, be forgotten, in educating the deaf and dumb, that our aim is not so much to make them acute grammarians, or subtle metaphysicians, as to render them useful members of society; and experience shows, that the more simple and ordinary modes of instruction, will effectuate this in less time, and with more success, than any complex and elaborate system.

DUNG, the excrement of various animals; it sometimes also implies, not only the dung itself, but a mixture of it with straw or other litter.

For the management and uses of dung in agriculture, see HUSBANDRY, and MANURE.

DURA MATER, a thick membrane, formed of two layers, which surrounds and defends the brain, and adheres strongly to the internal surface of the cranium. See **PIA MATER**.

Dutch-pink. See COLOUR-MAKING.

DUTY, in morals, that which a person ought to do. Moral duties include almost all human actions. The duties which the laws of society enjoin, are few compared with those which originate in, or are prompted by, the dictates of the understanding.

DYE

If those duties only were performed which are enjoined by positive laws, a person might perform them, and yet be, when compared with some of the exalted characters of our species, very little above the brute. It is a mistake, to suppose that many of our actions may be omitted or performed according to our inclinations: for a perfectly indifferent action, as to its moral tendency, can scarcely, perhaps, be found. That action which it is right to do, it is our duty to do, and the omission to do it is wrong. Our duties must be determined by our capacity, our knowledge, and our means, whether physical, mental, or pecuniary; and sometimes our duties may be determined by the judgment of others. It is a part of our duty, however, to endeavour to improve our own judgment, by studying intimately the effects of moral actions; and the more we become acquainted with the tendency and effect of these, the better shall we be enabled to understand our own duties, and to give advice relative to those of others.

DWARF-TREES, a kind of diminutive fruit-trees, frequently planted in the borders of gardens, and so denominated from their low stature.

DYEING, the art of fixing with uniformity and permanency, certain colouring materials upon, or into the fibres of wool, linen, cotton, silk, felt, ivory, or other fibrous or filamentous substances.

The art of dyeing is of two distinct kinds, one consisting of plain dyeing, in which one uniform colour is diffused over the substance to be dyed; and the other in fixing a variety of coloured patterns on a uniform ground; this last is termed *calico-dyeing*, because calico, or cotton, is the material usually employed for the purpose. But we cannot enlarge on this last.

In domestic dyeing, few utensils are necessary, and those can, in general, be supplied from every kitchen or wash-house. In dyeing, every article destined to receive any colour, should be previously made clean, and perfectly free from grease, or oleous matter. Wool, which is naturally of a greasy

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nature, requires to be scoured before it is dyed. Silk should be washed with soap and warm water: and cotton and linen require bleaching, and scouring in an alkaline ley.

The substances commonly dyed are animal, consisting of wool, silk, hair, leather, and skins of all kinds, or vegetable, such as cotton, flax, and hemp. A most important and essential difference exists between the affinity for colouring matter, possessed by these substances, so that a process which perfectly succeeds in dyeing wool (for example) may have no effect upon cotton; neither is there any agreement in quantity of colouring ingredient, necessary to dye each stuff. Generally speaking, however, wool has the strongest affinity for colour, taking it most easily, and retaining it most firmly; silk and other animal matters come next to wool, cotton next, and hemp and flax last: but, however, it does not always happen, that substances which take colour the easiest, retain it the longest.

Of the great variety of known dyes, some (comparatively few) can be applied to animal or vegetable fibre, without any other preparation, than that of cleansing the stuff, and immersing it in a decoction or infusion of the dye, for a sufficient time. On the other hand, the greater number of dyes are not permanent, unless the cloths, or other matter to be dyed, be previously impregnated with what has been termed a *mordant* (generally a salt with an alkaline, earthy, or metallic basis) which possesses a very strong affinity both with fibre, and with colouring matter, and hence serves to bind the one to the other. The usual practice is, first to steep the cloth or fibre in the mordant, and afterwards in the dye. The first kind of dyes are called substantive, the latter adjective colours.

Madder for instance, is an adjective colour, since it is rendered much more durable by the medium of alum, or of many other salts, than when used alone. Indigo is a substantive colour, as its durability is not increased by any mordant whatever.

The permanence of colours is also of considerable importance in the art of dyeing. Adjective, as well as substantive colours, vary very much in this respect. Indigo is a very permanent colour, resisting the sun, air, washing with soap, and most chemical agents. The oriental henne, which is a fine orange red, long resists the sun and air, but is altered and destroyed by soap. Archil and other of the purple lichens, are instantly altered by soap, and are soon changed by light and air. Of the adjective colours, madder is one of the most permanent known, retaining, when well applied, its body of colour, under almost every circumstance. Cochineal on wool, is nearly equally fast or permanent, but on cotton much less so. Brazil-wood fades much sooner than the last, whatever mordant is applied. Linen or cotton, requires a different mordant from wool or silk; and some colours adhere only to a particular mordant. The selection, strength, and proper application of mordants, with many other smaller circumstances, are of infinite consequence in dyeing, and form the truly scientific part of this beautiful art.

Mordants not only fix colouring matter, but they most commonly, in some degree, alter the natural hue. Thus an aluminous mordant, changes the dull red of madder to a bright crimson; the solutions of tin, not only fix the colour of cochineal in wool, but change it from a crimson to a bright scarlet; the salts of iron, which are powerful mordants, always alter the colour of dyes,—the yellow of weld, to olive-brown, drab, or lead-colour, according to circumstances; the red of madder to a violet brown, and striking a blueish-black, whenever the gallic acid is present. Hence a great advantage is most ingeniously made of mixing different mordants to produce varieties of shade: thus a mixture of the iron and aluminous mordant, will produce with madder, all the shades of pea-colour, purple, and violet: with weld, brown, olive-green, and the like: so that with no more than three or

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four colouring materials, an almost infinite variety of dyes may be produced by a due selection and mixture of the various mordants.

The substances principally used as mordants are earths, metallic oxyds, tannin, and oil.

Of earthy mordants, the most important, and most generally used, is alum. It is dissolved in water, and very often a quantity of tartar is dissolved along with it. Into this solution the cloth is put, and kept in it till it has absorbed as much alum as is necessary. It is then taken out, and for the most part washed and dried.

Acetate of alum, however, answers much better than common alum. It is prepared by pouring acetate of lead into a solution of alum: an insoluble compound is formed by the lead and sulphuric acid in the alum, which precipitates, and the acetate of alum remains dissolved in the liquid.

Lime is also sometimes used as a mordant, but it does not answer so well as alum. It is employed either in the state of lime-water, or of sulphate of lime, dissolved in water.

All the metallic salts or oxyds, are mordants, but the salts or oxyds of tin and iron, are those only which are extensively used.

Muriate of tin is dissolved in a large quantity of water, to which some tartar is also usually added, the cloth dipped in the solution, and allowed to remain till sufficiently saturated. It is then taken out, washed and dried.

Sulphate of iron is dissolved in water, and the cloth dipped in it: this is commonly used for wool. It may be used also for cotton, but the acetate of iron is preferable; which is prepared by dissolving iron, or its oxyd, in vinegar, sour beer, &c.

Tannin is used as a mordant thus: an infusion of nut-galls, sumach, or any other substance containing tannin, is made in water, and the cloth is dipped in the infusion, and allowed to remain till it has absorbed a sufficient quantity of tannin. Silk absorbs a great quantity of tannin. Tannin is also em-

ployed with other mordants to produce a compound mordant. Oil is also used for the same purpose, in the dyeing of cotton and linen. The mordants with which tannin is most frequently combined are, alum and oxyd of iron.

Besides these mordants others are occasionally used to facilitate the combination of the mordant with the cloth, so as to alter the shade of the colour; the chief of these are tartar, acetate of lead, common salt, sal ammoniac, sulphate and acetate of copper, &c.

The same colouring matter produces very different dyes, according as the mordant is changed; thus, if we use the aluminous mordant and cochineal, the cloth will be crimson; but the oxyd of iron and cochineal produce black.

The colouring matter with which the cloth is dyed, does not cover every portion of its surface: for cloth may be dyed different shades of the same colour. With a small quantity the shade is light; and it becomes deeper as the quantity increases. And all those colours which the dyers call compound colours, are, in fact, two different colours applied to the cloth at once. Thus cloth becomes green by being dyed first blue and then yellow.

Innumerable as are the different colours, and shades of colours, communicated, they all originate from four or five primary colours, which are as follows: blue, yellow, red, black, and fawn; or, as this last is sometimes called, root, or brown-colour.

Blue. The only two substances employed in dyeing blue are woad and indigo.

Indigo requires no mordant; every kind of cloth may be dyed with it as follows: let one part of indigo be dissolved in four parts of sulphuric acid; to the solution add one part of dry carbonate of potash, and then it is to be diluted with eight times its weight of water. The cloth must be previously boiled for an hour in a solution containing five parts of alum, and three of tartar, for every 32 parts of cloth. It is then to be thrown into a water bath, containing a greater or smaller propor-

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tion of the diluted sulphate of indigo, according to the shade which the cloth is intended to receive. In this bath it must be boiled till it has acquired the wished for colour. The alum and tartar facilitate the decomposition of the sulphate of indigo; the alkali answers the same purpose.

There are many other methods of dyeing with indigo, but we cannot describe them.

Silk is dyed light blue by a ferment of six parts bran, six parts indigo, six of potash, and one of madder. To dye it of a dark blue, it must previously receive a ground colour from archil.

Cotton and linen are dyed blue by a solution of one part indigo, one part of sulphate of iron, and two parts of quick lime.

Woad contains a colouring matter precisely similar to indigo, and by following the common process, indigo may be abstracted from it.

Yellow. Weld is the substance much employed for this colour; fustic, and quercitron bark are also used; and indeed these three constitute our chief yellows. But Venice sumach, saw-wort, dyers' broom, French berries, and American golden red, are occasionally used. Realgar, or sulphuret of arsenic, has latterly been used as a yellow dye. See SULPHURET OF ARSENIC.

Almost all yellow colouring matters must be dyed by the assistance of mordants. Alum is the most common; but oxyd of tin is used for very fine yellows. Tannin is also used after alum to fix the colour more copiously on cotton and linen. Tartar is also used; so also is muriate of soda, sulphate of lime, and even sulphate of iron.

The yellow dyed by fustic is more permanent, but not so beautiful as that given by weld or quercitron; the mordant for fustic is alum.

Weld and quercitron yield nearly the same colour, but as the bark yields colouring matter in much greater abundance, it is much more convenient and cheaper. The methods of using each of these are nearly the same.

Wool may be dyed yellow thus: let it

be boiled an hour or more in one-sixth its weight of alum, dissolved in a sufficient quantity of water. It is then to be plunged, without being rinsed, into a bath of warm water, containing in it as much quercitron bark as equals the weight of the alum employed. The cloth is to be turned through the boiling liquid till it has acquired the intended colour. Then a quantity of clean powdered chalk, equal to the hundredth part of the weight of the cloth, is to be stirred in, and the operation of dyeing continued for eight minutes longer.

For very bright orange, or golden yellow, the oxyd of tin must be used as a mordant. And for bright golden yellows some alum must be added along with the tin: for a delicate green shade, tartar must be added in different proportions, according to the shade wanted. By the addition of cochineal in small quantity, a fine orange may be obtained.

Silk is dyed different shades of yellow by either weld or quercitron bark. The proportion should be from one or two parts of bark, to twelve parts of silk, according to the shade. The bark tied up in a bag and put in the dyeing vessel whilst the water is cold. When it is heated to about 100°, the silk previously cleaned must be put in and continued in the liquor till it is of a proper colour. When the shade is wanted to be deep, a little chalk or pearl-ash should be added towards the end of the operation.

Cotton and linen should be prepared for yellow by dissolving one part of acetate of lead, and three parts of alum, in a sufficient quantity of water, heating the solution to 100°. The cloth must be soaked in the dye for two hours, and then hung out and dried; when the soaking and drying should be repeated; after which it is to be barely wetted with lime water, and then dried once more; the number of repetitions of the entire process must depend upon the brightness of the dye required. The dyeing bath is prepared thus: take twelve or eighteen parts of quercitron bark, according to the brightness required; let them be tied up in a bag

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and placed in a sufficient quantity of cold water. Into this the cloth must be put, and turned round in it for one hour, while the heat is gradually raised to 120°. It must then be allowed to advance to a boiling heat, and the cloth be suffered to remain in a few minutes only afterwards.

Red. The materials employed for this colour, are lac or kermes, cochineal, archil, madder, carthamus, and Brazil wood.

Woollen stuffs of the coarse kind are dyed red with madder; but fine cloth is almost exclusively dyed with cochineal; although the colour which it receives from lac or kermes, if less bright, is more durable. Indeed two articles, *lac lake*, and *lac dye*, imported lately from the East Indies, dye very bright and permanent scarlets. Brazil wood is scarcely used except as an auxiliary: the colour which it imparts to wool is very fugitive.

Scarlet may be dyed thus: For each pound of cloth, put from fifteen to twenty quarts of very clear river water into a small copper. When the water is lukewarm, put in two ounces of cream of tartar, and one drachm and a half of powdered cochineal; when the liquor is ready to boil, add two ounces of a solution of tin made thus: take eight ounces of clear river water, and eight ounces of strong aquafortis, mix them together; then add half an ounce of sal ammoniac by degrees, taking care that one piece dissolves before you add a second; then put in two drachms of saltpetre; lastly, add by little at a time, one ounce of pure grain tin. When the whole is dissolved it is fit for use. It should be kept in a cool place closely stopped.

The dyeing materials being thus mixed in the copper, the fire should be raised under it, and when the liquor boils, the cloth after being passed through warm water that it may receive the dye equally, is to be put in and well handled in the liquor for an hour and a half; it must then be taken out and slightly washed in clean water. Then prepare a fresh water, in which

must be put one ounce and a half of pure starch; and when the liquor is a little more than lukewarm, six drachms and a half of cochineal, finely powdered, must be thrown in a little before the liquor boils. Two ounces of the solution of tin must then be added. Boil the liquor after this a few minutes, then cool it a little, put in the cloth to be finished, and boil it in the liquor for an hour and a half. Take it out and wash it, and the process is completed.

For crimson the following process will answer: your copper being ready to boil, put in for each pound of cloth, two ounces and a half of alum, and one ounce and a half of white tartar; let the liquor boil a minute or two, then put in the cloth, and boil it for half an hour, when it is to be taken out and cooled in all places alike. Fill the copper again with fresh water, the former liquid being thrown away. And when about lukewarm, put in about an ounce of cochineal finely powdered; when it boils, cool it down by the addition of a pint of cold water; put in the cloth, and boil for an hour, or an hour and a half, as occasion may be. It must now be taken out, washed, and hung up to dry. If a lighter shade be required, use less of the ingredients. This colour is called grain crimson, to distinguish it from false crimson, obtained from Brazil wood.

Silks may be coloured red by madder by means of a mixed mordant of alum and the solution of tin; but the hues from madder are seldom sufficiently bright, and hence cochineal and carthamus are generally used.

To obtain shades of red, the above processes must be varied.

Cotton may be dyed scarlet by means of the solution of tin, cochineal, and quercitron bark, but the colour is too fading to be of any value.

Black. The substances employed to give a black colour to cloth, are red oxyd of iron, and tannin. Log-wood is usually employed as an auxiliary, because it communicates lustre, and adds to the fulness of the black.

Cloth before it receives a black colour is usually dyed blue, which ren-

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ders the colour much finer than it would otherwise be. If the cloth be coarse, blue may be too expensive; a brown colour is then previously given to it by walnut peels.

The proportions used by dyers for black, are: for every hundred pounds of woollen cloth, dyed first of a deep blue, about five pounds of sulphate of iron, five pounds of galls, and thirty of logwood. They begin by galling the cloth, and then pass it through the decoction of logwood, to which the sulphate of iron has been added.

The following is a process of dyeing black in the small way: fill the copper to the brim with soft water, and when it begins to boil, add four ounces of logwood, three ounces of sumach, and three of alder bark; boil these ingredients half an hour, and put in the cloth; keep it under the water, and boil it for one hour, moving it about every ten minutes during that period. Then take the cloth out of the liquor, and hang it out to cool. Then dissolve six ounces of sulphate of iron in a bowl of the boiling liquor; mix two-thirds of this solution into the copper, and check the boiling by throwing in as much water as may have evaporated; the cloth is then to be put again into the liquor, stirred as before, and boiled for one hour; it is then to be taken out and cooled again in all parts alike; in the interim add the remaining of the dissolved copperas; check the boiling as before, put in the cloth again, and boil it for two hours; then take it out to cool again. While cooling put into the copper two or three ounces of logwood, two or three ounces of bark, an ounce of sulphate of iron, two ounces of pearl-ash, and about half an ounce of pounded archil. These must boil one hour; the boiling must be again checked as before, the cloth again put in and boiled for one hour, and handled as before. Thus the process will be completed. This process is tedious, but it will produce a very good black.

Silk is dyed black by a process not very different from that of cloth. It imbibes taunin freely, which can be

given to it at pleasure, by allowing the silk to remain a shorter or longer time in the decoction.

It is by no means easy to give a full black to linen or cotton; and still less so a durable black; the colour generally yielding to the action of soap. The cloth previously dyed blue must be steeped for twenty-four hours in a decoction of galls; a hot liquor is then to be prepared, containing an acetate of iron, formed by saturating acetous acid with brown oxyd of iron; into this liquor plunge the cloth in small quantities at a time, and work it with the hand for a quarter of an hour; wring it out and air it; after which let it be worked again in the liquor, and again wrung out and aired. These alternate processes are to be repeated till the requisite colour is produced: a decoction of alder bark is usually mixed with the liquor containing the galls.

Brown, or fawn colour, buff, and nankin. Birch, alder bark, and sumach, are occasionally used for these colours, but the more common is a decoction of walnut peels, or walnut root. The best of these in dyeing fawn colours, is the bark, or riud of the walnut.

A copper half full of water is placed over the fire; as soon as it grows warm, walnut bark is to be added in proportion to the cloths intended to be dyed, and the lightness or depth of the shades required. It is then to be boiled for about a quarter of an hour, when the cloths, previously moistened with warm water, are to be immersed in it, frequently turned, and well stirred till they have sufficiently imbibed the colour. They are of course to be aired, dried, and dressed in the usual manner.

Walnut root requires a different process: a copper is filled about three parts full of river water, into which the root is immersed, tied up in a bag. When the liquor is become very hot, the article to be dyed is to be plunged into it, repeatedly turned, and occasionally aired. The lighter stuffs are next to be dipped, till the colour is completely extracted. Care must be taken that the liquor does not boil.

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The process of dyeing with alder bark, is nearly the same as that with walnut roots. It is chiefly used for worsteds, imparting shades darkened with sulphate of iron.

Sumach possesses nearly the same properties as the bark of the walnut-tree. Its colour is not so deep, somewhat inclining to green, but solid and permanent.

These different substances, however, are not unfrequently mingled together, and as they differ only in degrees of colour, it is easy by their admixture to obtain various shades.

We have thus stated the chief methods of dyeing with the primary colours, and from these a great variety of secondary colours may be obtained.

Green is a mixture of blue and yellow; the cloth, however, is generally first dyed with blue, and afterwards with yellow, to produce the desired colour. When sulphate of indigo is employed, it is, however, usual to dye the cloth at once.

Violet, purple, and lilac, are all mixtures of blue and red. Wool, cotton, and linen are first dyed blue; the two last are then galled and soaked in a decoction of logwood; but a more permanent colour is given by means of oxyd of iron; they are then dyed scarlet in the usual manner; or by cochineal being mixed with the sulphate of indigo, the process may be performed at once. Silk is first dyed crimson by means of cochineal, and then dipped in a sulphate of indigo.

Orange is a mixture of yellow and red: if blue be added to a mixture of yellow and red, the result is an *olive*. Wool may be dyed orange by first dyeing in scarlet and then in yellow. If first dyed with madder, the produce will be a cinnamon-colour. Silk is dyed orange by means of carthamus; cinnamon-colour by logwood, Brazilwood, and fustic, mixed together. Cotton and linen are rendered cinnamon-hued, by means of weld and madder; and olive-hued by being passed through a blue, yellow, and finally a madder dye.

Greys, drabs, and dark browns, are all mixtures of black with other colours.

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If cloth be previously combined with brown oxyd of iron, and afterwards dyed yellow with quercitron-bark, a drab of different shades will be produced according to the proportion of the mordant employed. And the drab may be deepened by mixing a little sumach with the bark.

Notwithstanding the discoveries of modern chemistry in the art of dyeing, and the permanency with which colours are now affixed to cloths, there yet remains many secrets in this art, known but to a few persons, and who, in consequence, have much emolument to themselves. And it will also, sometimes, happen that with the utmost skill and ingenuity, and the application of chemical principles too, that the unlettered plodder shall, in the arts, excel the most acute practical philosopher of the age.

The finishing, as it is called, of cloths, cottons, and other matters subjected to the process of dyeing, requires some attention. Woollens are generally finished by persons called hot-pressers; but those who wish to perform this operation themselves, may do it by placing the cloth between press-papers, and using common sod-irons, not heated too hot, nor should they be suffered, when used, to remain too long in one place. For cottons, a calender or mangle will do; or simply ironing them. Silks may be pinned out, as a clear-starcher pins out muslin; and ribbands are finished by drawing the heated sod-iron over them on the wrong side, they being previously placed between press-papers.

Although we have here endeavoured to concentrate the art of domestic dyeing, the reader will nevertheless find many hints and remarks, in our description of various articles throughout our work, well worthy his attention. See *ANATTO, BARBERRIES, BLUE-BOTTLE, BONES, &c. &c.*

DYER'S BROOM, or *Genista tinctoria*, a species of the genus *Genista*, or *GREEN-WEED*. This genus contains twenty-five species, almost all of them natives of Europe, most of them of the south. Of this genus a few

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are spinous, but by far the greater number are unarmed. Three only are common to our heaths. The *Pilosa*, the *Anglicana*, and the *Tinctoria*. The *Anglicana* is refused by cattle.

The *Tinctoria*, or Dyer's broom, is found both on our heaths and in our pastures, with a shrubby stalk about three feet high. The flowers are used by dyers for giving a yellow colour to their materials.

Dyer's-weed. See WELD.

† DYSENTERY, or BLOODY-FLUX, is a disease in which the patient has frequent stools, accompanied with much griping, and followed by a tenesmus. The stools, though frequent, are generally small in quantity, and the matter voided is chiefly mucus, sometimes mixed with blood. At the same time, the natural fæces seldom appear; and when they do they are generally in compact hardened lumps.

This disease occurs especially in summer and autumn, at the same time with autumnal intermittent and remittent fevers; and with these it is often complicated. It comes on sometimes with cold shiverings, and other symptoms of fever; but more commonly the symptoms of the local affection appear first.

Perhaps there is no disease affecting the human body which requires more accurate discrimination in its treatment than dysentery; and perhaps no one disease has given rise to more discordant opinions and modes of treatment among the faculty themselves.

That this disease is sometimes epidemic, we readily admit; it has been asserted too, that it is always contagious, but the truth of this we strongly doubt. That it is a disease frequently attended with danger, and requiring considerable skill in its management and cure, we are perfectly aware.

At the beginning of this complaint, if the fever be considerable, the pulse full and hard, with other symptoms of an inflammatory disposition, bleeding may be advantageous; but most probably, these symptoms will be better removed by emptying the stomach and

bowels with gentle laxatives, given from time to time, till the fæces assume a healthy appearance, and the intolerable smell which generally accompanies them in this disease, is removed. Rhubarb and senna are the best purgatives.

The frequent and severe gripings which attend this disease, are most speedily relieved by opiates; but care must be taken that the opiates do not so constrict the bowels, that the offensive matter cannot pass off, for by such constriction, the mischief will be increased.

Emetics, when the stomach is much affected, have been recommended: they are of very doubtful utility.

Mucilaginous clysters are very serviceable and may be injected every eight or twelve hours. The following clyster is one of the best for the purpose: Take of compound decoction of mallows ten ounces; of olive-oil two ounces; of mucilage of gum arabic one ounce. Rub the oil with the mucilage until they have perfectly united; then add gradually the decoction of mallows.

In regard to food in this disease, every thing of a flatulent, and indigestible kind, must be strictly prohibited. When no inflammatory symptoms are present, and we believe they are rare, beef-tea, tapioca, arrow-root, sago, &c. will be of service. The thirst will be best quenched by toast and water.

It is scarcely necessary to add, that cleanliness in this disease is of the utmost consequence. The patient's linen, and bed-clothes, should be often changed: the bed-room be well ventilated, and every thing which is liable to produce an unpleasant smell, or induce putrescence, should be carefully removed.

DYSENTERY in HORSES. Bleeding, if the pulse be quick, and other symptoms of inflammation appear, will be necessary in the first instance; and if the blood has much buff upon it, it may be proper to repeat the operation after a few hours. Some laxative medicine should then be given, and an opening clyster thrown up. The fol-

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lowing laxative will be found to answer the purpose : take of powdered aloes from two to three drachms ; of carbonate of potash two drachms ; of water eight ounces. Mix them, and add of castor-oil twelve ounces, for one dose.

When purging has taken place, the horse should be well supplied with gruel made of wheat-flour, and if he refuse to drink, he should be drenched. The body should be kept warm, and well rubbed, and the legs bandaged. If the disease continues after the bowels have been emptied, a ball composed of one drachm of opium, and half an ounce of ipecacuanha, has been recommended, but we believe it will rarely be found necessary.

When the disease has been subdued, tonic medicines, and nourishing diet, are necessary.

Cattle, and *sheep*, are said to be subject to a similar disease. A laxative of Epsom-salts, gruel, and castor-oil, should be first given, particularly to cattle ; warm milk has been given to sheep ; nitre and chalk, in doses of half a drachm, are recommended : and also twenty or thirty drops of laudanum, twice or thrice a day, with frequent clysters of warm milk and water. This disease is also supposed to be infectious.

DYSPEPSIA, has been defined a want of appetite, accompanied by nausea, vomiting, flatulence, heartburn, costiveness, and pain in the stomach, with other symptoms of debility in that organ. But *bad digestion* is a much better definition of it : for dyspepsia frequently exists when the appetite for food is good. In which case it is evinced by the disturbance which arises in the stomach, and sometimes also in the bowels, sooner or later, after the food is taken. Thus many persons have a desire for, and frequently eat hot rolls with butter for breakfast, and experience in the course of an hour or more afterwards, an unpleasant acidity rising into the mouth, which is a sure indication that the stomach labours under disease : in other words, digests the food badly.

Dyspepsia is a symptom of a great

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variety of diseases ; indeed, it is generally an attendant on almost all diseases of debility. Thus it is conspicuous in the ague, chlorosis, dropsy, jaundice, asthma, hypochondriasis, &c. It may be, and probably sometimes is, a primary disease of the stomach itself, but it more frequently arises from some general disease.

One of the most common causes of dyspepsia, but too often overlooked by the physician, is excessive sensibility ; and this sensibility is, unquestionably, considerably fostered and promoted, by that literary education which, in this country, is become so common, so fashionable, and we may add so fascinating. To the female sex in particular, this is productive of considerable mischief : as it not only increases their sensibilities, but the sedentary occupation of reading itself, tends directly to induce dyspeptic complaints. By these observations, however, we do not mean to undervalue the importance of literature ; on the contrary, we admit that literature adorns and ennobles man ; but it is its excess of which we complain.

We have, under the article **WANT OF APPETITE**, stated the general symptoms, and cure of this disease ; but although we have mentioned, we have not insisted upon **EXERCISE**, and its all-powerful nature, as a cure for dyspepsia in almost all its stages, and in almost all diseases which it attends, and in which exercise can be borne. Nor must the dyspeptic patient of literary habits, and excessive sensibility, be exempt from this powerful prophylactic. We use the term exercise, but perhaps **LABOUR** conveys a more suitable meaning. Labour, then, bodily, personal labour, or a moving of the body and its muscles, in a variety of directions, lifting weights, or carrying burthens, riding, walking, digging in the garden, ascending steep hills, all contribute, when properly adapted to the patient, to remove this unpleasant, and in Great Britain, we fear, increasing disease.

DYSURY, a difficulty and pain in discharging the urine. See **GRAVEL**, **STRANGURY**, and **STONE**.

E

EAR

Eagle. See FALCON.

EAR, the organ of hearing : or that part through which animals receive the impression of sounds.

The human ears are extremely delicate in their structure, and are liable to various diseases, the principal of which is, their total, or partial incapacity of conveying sounds, commonly denominated DEAFNESS. We have under the latter article, and also under DUMBNESS, pointed out the most proper remedies for such defects. We may add here, that frequent washing of the *internal ear*, notwithstanding it has been advised by high medical authority, is not to be adopted indiscriminately. Indeed, our advice to persons whose hearing is good is, not to meddle with the internal ear at all. To the exterior part, cleanliness, and good manners, will necessarily compel attention.

The organ of hearing in different animals is very differently constituted. In several, and especially in some fishes, the bones of the ear are placed outside of the cranium ; in others, as the frog, the vestibule, or entrance into the organ, is from the mouth. In man, indeed, it is partly so : for such is the termination of the eustachian tube. See EUSTACHIAN TUBE.

When insects have insinuated themselves into the ear, they should first be killed, by filling up the passage with olive-oil, oil of almonds, or any other bland fluid, which will destroy them without injuring the ear itself. They may then be washed out by injecting warm water frequently, by means of a syringe.

The punishment for several crimes committed in this country, is the cutting off of one ear. To the honour of the good sense and feeling of the age, this punishment is very rarely inflicted. Mankind begin to be convinced, that

bodily mutilation, and infliction of bodily pain, is not the way to reform.

EAR, *abscess in the*. It sometimes happens that the ear is attacked with considerable pain and swelling, and that a suppuration takes place, either in the deep-seated parts of the ear, or in the passage within sight. It is most desirable, if possible, to prevent such suppuration, and, therefore, one of the most probable means of doing so, is either to put on a blister behind the ear, and to keep it open with savin cerate for a few days, or to apply a large blister to the nape of the neck, keeping it open for at least a week, by the same cerate, or by the blistering-fly ointment. See PERPETUAL BLISTER. If, however, the pain and disposition to suppuration do not abate, a soft poultice of bread and milk, tied up in muslin, should be applied to the ear, and it should be also bathed with milk and water, as hot as it can be conveniently borne, three or four times a day. Sometimes, the interior of a roasted onion, placed in the ear, will answer the purpose equally well.

Puriform discharges from the ears, of long standing, accompanied with more or less deafness, have been effectually cured by Mr. CURTIS, by an injection of nitrate of silver, dissolved in water. He began by using ten grains of the nitrate dissolved in four ounces of water, and he increased it to the extent of thirty-five grains. The cure, however, is tedious ; generally many months in being effected. Our readers should be informed that nitrate of silver is a powerful caustic, and, although we here recommend it, we doubt the propriety of its being applied without the advice of a medical attendant.

EAR-TRUMPET, an instrument which assists the hearing of persons who are deaf. It is said, however, that

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this instrument, by being constantly used, will entirely destroy the sense of hearing. A superior method of conveying sounds to the deaf has been advised by means of a cylindrical rod, or tube of ivory, or any similar hard substance; it may be from 6 to 12 inches long, and from a quarter to half an inch in diameter; if it be made hollow throughout, one end, which is to be placed in the mouth between the front teeth, ought to have a much smaller aperture than the other extremity.

EAR-WIG, or *Forficula*, a genus of insects, consisting of eighteen species, chiefly inhabitants of Europe and America; two found in our own country: the *auricularia*, and the *minor*. The former of which is of a dark chesnut-colour; forceps curved and toothed at the base; antennas with fourteen joints. It is very common in wet ground, ripe fruit, and old wood; and has been occasionally found to creep into the ears of persons who sleep on the ground, in the open air. See **EAR**. If ear-wigs are troublesome in gardens, particularly to wall-trees, hollow reeds, or bean-stalks, cut into lengths of nine inches, should be placed near their branches; into which the ear-wigs will enter: they should be examined and the ear-wigs destroyed, every morning.

Ear-grass. See **AFTER-MATH**.

EARTH, in its most extended signification implies the terraqueous globe or ball which we inhabit, consisting of land and water. But in a more restricted sense, the term earth has been, by chemists, applied to the following substances: lime, magnesia, barytes, strontian, alumina, glycina, zircona, silica, and yttria. However, even these have been by the most modern chemical research, so far decomposed as to deserve the name, as they possess in many respects the character, of metals. See **BARIIUM**, **CALCIUM**, **CLAY**, &c.

The earth found on the surface of our globe, in which vegetables grow, is now known to consist of a great variety of different substances, and upon the different admixtures of these vari-

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ous substances, depend the sterility or fertility of soils. See **SOILS**.

Earth, heavy. See **BARYTES**.

Earth, Japan. See **CATECHU**.

EARTH-NUT, **PIG-NUT**, or *Buni-um*, a native plant, consisting of two species, the *bulbocastanum*, and the *fleuosum*. They are both perennial plants, growing in sandy and gravelly meadows, orchards, and woods. The roots are searched for, and eaten by hogs; they are of a dirty brown colour, a little bigger than a hazel nut, and sweeter than the chesnut. They are agreeable esculents.

EARTH-WORM or *Lumbricus*, a genus of worms consisting of sixteen species, three or four of which are natives of Great Britain: the following are the most worthy of notice:

The *Terrestris*, or Dew-worm, having a red body, with eight rows of prickles. Another variety much smaller. Inhabits decayed wood and the common soil. Devours the cotyledons of plants, and wanders about by night. The food of moles, hedge-hogs, and various birds.

The *Marinus*, or Lug, having on the back two rows of bristly tubercles. Body pale red. Inhabits the shores of England, and other parts of Europe; where it buries itself in the sand, leaving a little rising with an aperture at the surface; it is used as a bait for fishes.

The *Variegatus*, rufous, spotted with eight rows of prickles. Inhabits wet plantations; and is the most beautiful of its kind; body red, very finely tessellate with brown; easily breaks in pieces, and easily reproduces what has been lost.

The *Tubifer* with a reddish body; inhabits the bottom of rivulets, where it forms a perpendicular tube of earth for its dwelling.

The long worms found in the intestines of the human body, and some other animals, are, most probably, from the eggs of some of this tribe, being swallowed with the food. See **WORMS**.

EAST, one of the four cardinal points of the world, being that point of

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the horizon where the sun is seen to rise, when in the equinoctial.

EAU-DE-LUCE, a white, milk-like liquor, used for smelling to in faintings, &c. We do not know that it is at all superior to the common *aqua ammonia*, or spirit of sal ammoniac, of the shops. It may be made thus: dissolve two drachms of gum mastich in two ounces of rectified spirits of wine; pour off the clear tincture into four ounces of liquor of ammonia: shake them together. Lavender water, or other scents, may be added at pleasure.

EBONY, a valuable wood, the produce of the *amerinum ebenus*, a native of the West and East Indies, of which there are several varieties, which yield woods of different colours; chiefly, however, black, red, and green. The first is of most estimation: it is a tall tree with dark-coloured bark, and dark green myrtiform leaves. Green ebony is the produce of a variety less lofty, and of a more bushy form, with smooth, bright, green leaves. This wood, like the preceding, is used as an inlay; and it also affords a good green dye.

Black ebony is frequently imitated by the cabinet-maker; pear-tree wood, amongst others, is used, when dyed, for this purpose.

ECONOMY, in domestic affairs, the management of a family with propriety and without waste. As attention to economy is at all times necessary, the following calculations may, therefore, be found useful. We premise, however, that in forming these estimates, no line is drawn for the poor; and as those with large fortunes are comparatively few, we have the less occasion to write for them: but the middling classes of society may find our hints useful. Should any calculation be thought too great or too small, it should be remembered, that our wants are different, some choosing one thing, and some another. And never let the maxim in economy be forgotten, that as things grow dearer, if we cannot increase our income, and wish to be at ease, we must decrease our expenses.

Bread. Each person eats on an

average, about three quarters of a pound daily. So that nine quartern loaves are a full allowance for seven persons per week.

Butter. Three quarters of a pound for each person per week, allowing for melting, will be found ample.

Sugar. The same as butter.

Tea. Two ounces per head weekly, are ample. Here we cannot avoid observing, that if half the expense of tea, were laid out in milk, and milk and water drunk, instead of tea, that it would be more economical, and we believe equally, perhaps more wholesome.

Malt-liquor. A quart daily for each person, will be found generally enough.

Meat or Fish. One pound weight daily, is a full allowance, both for dinner and supper for each person. If any vegetables are eaten, the quantity of meat will be less: so that the value of one pound of meat will be sufficient for both meat and vegetables.

Vegetables. The expense of these will vary according to the season of the year. Potatoes are, however, a standing dish, and from one pound, to a pound and a half of these, will be an ample allowance for each person for dinner.

Of vegetables, and indeed, every other article in domestic economy, it may be observed, that they ought always to be purchased with *ready money*, and at such times as they are cheapest. A winter stock, of both potatoes and coals, ought always to be laid in at that season when they can be bought cheapest and best.

Coals. A moderate fire, in a proper grate, may be kept up through the winter six months, on the average consumption of two bushels weekly; and in London, the cost of coal, therefore, for one fire should not be more than three shillings per week.

Luxuries. Wine, spirituous liquors, strong beer, fruit, cream, and entertainments for friends, must be regulated by what families have to spare, always remembering, that sickness, the physician's fees, and other contingencies, must be provided for; and also if there be children, that a provision must be made for them.

From these estimates we draw the following corollaries of expenses attending a family consisting of husband and wife, four children, and a maid servant.

Weekly.			£.	d.
Bread for 7 persons, 9 quartern loaves at	10d. each		0	6
Butter " " 5½ pounds at	1s.		0	8
Tea for six " 12 ounces " " 7s.			0	9
Sugar for ditto 4½ pounds " " 1s.			0	6
Meat or fish, 7lbs. daily at	10d. 5s. 10d. daily		2	10
In this calculation vegetables, puddings, &c. are included.				
Salt, vinegar, mustard, pepper, &c.			0	0 7
Milk, one pint daily			0	1 2
Table beer at 20s. per barrel, 11 gallons, at 6½d. per gallon			0	6 4
Strong beer occasionally			0	2 6
Washing			0	7 0
Haberdashery, viz. pins, needles, thread, tape, &c.			0	2 0
Wear and tear, breakage, scouring materials, &c.			0	2 3
Candles per week, average winter and summer			0	2 0
			£4	7 0

Yearly.			£	s.	d.
Four pounds seven shillings per week			226	4	0
Five chaldron of coals at 2l. 14s.			13	10	0
Clothes for master and mistress			30	0	0
Ditto for four children			26	0	0
Lying in expenses, (once in two years,) per year			7	10	0
Pocket expenses, including letters, &c. for all the family			11	10	0
Schooling for two children			10	0	0
Apothecary			8	0	0
Servant's wages, including tea and sugar			10	0	0
Standing rent and taxes			60	0	0
			£400	0	0

Of the rural economy recommended in books to be pursued by persons retiring from the town to the country, and which is asserted to be so advantageous, we cannot speak with approbation. From our own experience we are convinced, that no profit will, in general, be derived from *Farming* by those who are not professedly farmers; the keeping of a cow or a horse is the extent to which we advise such persons to go: the keeping of poultry may be pleasant, but we do not think it will be found profitable.

EDDISH, or **EADISH**, the latter pasture or grass, which comes after mowing or reaping.

EDGINGS, among gardeners, the plants set round the edges or borders of flower-beds. Some prefer annual

edgings; others the dwarf Dutch box, the seasons for planting which are the autumn, and very early in the spring. In our opinion, however, such useless formality as the last may very well be omitted. A variety of annual edgings offer both blossoms and beauty.

EDUCATION, that series of means by which the faculties of the human mind are either formed or called forth.

In consequence of the ease with which children and young persons receive impressions, and acquire ideas, the business of education has been principally attended to in the earlier periods of life, and so far mankind has acted wisely. But in most of our systems of education two mistakes have been committed; one in supposing that the education of very young children is of

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trifling moment, and the other in concluding that when we are enabled to take an active part in life, our education is *finished*, whereas, in truth, it is but just begun.

That education which teaches merely reading, writing, and arithmetic, and indeed a knowledge of the learned languages; which inspires a young person with habits of industry and acuteness, and enables him to avail himself of the circumstances in which he is placed, so that he may acquire wealth and consequence, may seem, in the estimation of many persons, only *deserving* of attention. But in the formation of the human character, education is a far more momentous and important concern. The operation of education begins the moment we enter into the world, and never ceases to influence us as long as we live in it. Education consists not merely in the reception of precepts or lessons impressed upon our minds, through the medium of professors, specifically appointed to inform us, but of that more important concurrence of circumstances with which we are surrounded from our birth, and which maintains over us a ceaseless, and often unobserved activity, and prompts us to all that is good, great, and virtuous; and sometimes to vice, to misery, and to wrong. Hence if the lessons of the preceptor be powerful, of how much more power are the conduct and conversation of our parents, our friends, and our neighbours, by whom we are constantly surrounded, and which conduct and conversation we are incited, from the imitative nature of our minds to approve and to follow. This being the real nature of education, the importance of surrounding the child, from the earliest period of infancy with such a concurrence of circumstances as is calculated to shape the growing mind to virtue, and to truth, cannot be too strongly insisted upon: for upon those circumstances will depend, in great measure, the conduct of the future man.

What, then, should be the proper business of education? To impress upon the mind of the child, by both

words and deeds, a due sense of his capabilities; that moral worth and virtue are within the range of his powers, and to which he should aspire; and thus lead him on to distinguish virtue from vice, and happiness from misery:—to enable him to attribute neither more nor less than its proper and intrinsic importance to every acquisition and to every pursuit; and thus, instead of being borne along by the follies or the prejudices of mankind, to raise himself above them to that degree of mental and moral excellence which will enable him to judge distinctly of the value of all earthly enjoyment, and to select those objects of pursuit which contribute most to his own, as well as to the general happiness of his fellow creatures.

This being the business of education, we shall be asked how is it to be effected. We answer, that from the nature of our work it is impossible we can go much into detail on this, or indeed on any other subject; but of this truth we feel assured, that, although many improvements in education have been adopted and brought into notice by Dr. BELL, and Mr. JOSEPH LANCASTER, and others, and which, till better plans are matured, will of course be followed, a knowledge of the proper education of the human mind, adapted to every circumstance, situation, and capacity, is *still in its infancy*. If there be any one who, at present, pursues education upon the best plan, and the most praiseworthy principles, it is Mr. ROBERT OWEN, of New Lanark in Scotland.

In education it is, however, essential that the natural capacity should be well understood, before attempts to impress the mind with systematic instruction be made. In some children the memory will be found naturally more capacious than in others; in others the imagination, or the imaginative faculty, is predominant: it is obvious, therefore, that precisely the same mode of instruction for different capacities, cannot succeed equally well. And we have the conviction forced upon us, that in the present day, and we fear almost always, in

every process of education in past ages, the memory has been too much exercised, the judgment too little.

Upon a review of the nature and objects of education, and the nature also of the human mind, it cannot be too strongly pressed upon our attention, that the wisest and best of men are always LEARNERS; that, as long as we live, it is our duty not only to use every effort to improve our own moral and social well-being, but also that of our fellow creatures; that the knowledge acquired by experience is the best; that such knowledge, if properly applied, must teach us diffidence and humility; and that the more we become acquainted with human nature, the less reason shall we have to be proud of our own acquirements, or to depreciate those of our fellow men.

In conclusion, upon this momentous subject, we may observe, that to make the human mind a mere word-book, in the acquisition of ancient learning, is surely a great prostitution of the human understanding; and when we hear of a person having acquired a knowledge of ten, or even more languages, we may hope, but we certainly do not often find, that he is, therefore, a wiser and a better man; and wisdom and virtue should be the objects of all education. In a word, man is a *progressive* being; his progression is his grand distinction; he is the only progressive being upon this globe; when he is most rapidly progressive, then he most completely fulfils his destiny; any institution for education which is hostile to progression is, therefore, the most preposterous and vicious thing which the mind of man can conceive. See CAPACITY, CHARACTER, CIRCUMSTANCES, MIND and MORALS; and also an excellent article on this subject, in the *Supplement to the ENCYCLOPEDIA BRITANNICA*, Vol. IV, part I.

EEL, or *Muraena*, in zoology, a genus of fishes consisting of nine species. In forming this genus nature seems to have made a near approach to the reptile tribes; like these animals the body is long, slender, and flexible. Excepting

the small pair of pectorals, it may be said to have no fins: for the dorsal, anal, and tail fins, are united in one web, which surrounds a large portion of the body. The apertures to the gills are small, and placed behind the pectoral fins.

The eel is viviparous, and is impregnated in the same manner as obtains among the cartilaginous tribes.

In their habitation the fishes of this genus are still more singular than in the manner of propagating their young. They can reside either in salt or fresh water, and are in some measure independent of either: for they sometimes leave their native element, and wander, during the night, along the dewy meadow, not only for a change of habitation, but in quest of prey, at which times the snail is commonly the victim.

There is no animal more vivacious than the eel; when drawn from the water it will survive blows which would kill an animal ten times its size; and, even after it is cut asunder, the different parts are seen to move. It is, however, easily destroyed by cold. Though fond of hiding in the mud, it cannot live in thick, turbid water.

The species of this genus are as follow:

The *Helena*, or Roman Eel, inhabits the European and American seas, is without pectoral fins; body variegated. A variety spotted with black and green; exceedingly voracious; bites dangerously; was regarded by the Romans as one of the greatest luxuries of the table.

The *Colubrina*, or Snake Eel, without pectoral fins; body with alternate rings of yellow and black. Another variety spotted with black. Inhabits Amboyna, and has much the appearance of the anguis seriale.

The *Melanops*, or Speckled Eel, with a blackish body speckled with white. Inhabits the southern ocean: about two feet long.

The *Ophis*, or Spotted Sea Serpent, inhabits European seas; from three to four feet long.

The *Serpens*, or Serpent Eel, inhabits the southern European seas.

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The *Anguilla*, or Common Eel; lower jaw longer; body of one colour: in muddy waters black, beneath yellowish; in gravelly, clear waters, green or brownish, beneath silvery. Inhabits almost every where in fresh waters. Grows sometimes to the length of six feet, and weighs twenty pounds; but usually much smaller, not found often exceeding one pound in weight; the flesh of those caught in running, or salt water excellent.

The *Mytus*, or Flat-tailed Sea Serpent: a variety of this species supposed to be poisonous. Inhabits European seas.

The *Conger*, or Conger Eel, has the lower jaw rather shorter than the upper; nose with two tentacles; lateral line whitish, with a row of spots. This species often grows to an enormous size; some specimens have been found eighteen inches in circumference, ten feet long, and weighing one hundred pounds. A fishery of congers, in Cornwall, forms a considerable article of commerce. They are annually exported to Spain and Portugal in a dried state; and are there ground down into a kind of powder, used in enriching their soups.

This species is distinguished by the same voracity as the former; it devours other fish, crabs, and even carcasses. The flesh when eaten has sometimes produced vomiting, purging, and other disagreeable consequences. See POISONS.

The young of this species is said to be the elvers found so plentifully in the Severn. See ELVERS.

The *Gattata*, is glaucous, speckled with black; inhabits Arabia.

EFFECT, the completion of the operation of a cause. See CAUSE.

EFFERVESCENCE is that rapid disengagement of gas which takes place in certain liquids, or mixtures of liquids with certain other bodies: it consists in numerous bubbles rising to the surface, forming a head of froth, and bursting with a hissing noise.

EGG, a body formed in many kinds of female animals; it consists of an embryo, or fetus, inclosed in a shell.

EGG

We shall here only treat of the egg of the hen.

The egg of the common hen, is lined throughout with a thin, but tough membrane, which dividing near the obtuse end of the egg, forms a small bag, and contains what is called the *albumen*, or white, and the *vitellus*, or yolk. See ALBUMEN and YOLK.

The yolk of the egg consists of albumen, and a considerable quantity of oily matter, which may be obtained by pressure after boiling: it is yellow and tasteless. The yolk is used occasionally for combining oleous medicines, &c. with water.

The whites of eggs are used occasionally for fining certain liquors: they appear to possess for this purpose the qualities of isinglass.

The shell of the egg is almost entirely carbonate of lime, cemented by mucus. It is used for a white colour. See COLOUR-MAKING.

Eggs are said to be an agreeable and nourishing food; and they are so when eaten either raw, or very slightly boiled; but when boiled hard they are not suitable for many stomachs; indeed, we think that dyspeptic patients should avoid eggs altogether. The fashion of eating eggs as a kind of condiment at breakfast and other meals we wholly disapprove. Fried eggs and bacon form a dish of which many persons are fond; but we scarcely know one more decidedly injurious to those whose digestive faculties are impaired. The most wholesome, and perhaps the most agreeable way in which an egg can be taken as nutrition, is to beat it up with a small portion of sugar, afterwards to dilute it with four ounces of warm water, adding some grated nutmeg, and a glass of good wine.

The goodness of eggs may be known either by their general transparency when examined by a candle; or, which we believe a better method, the obtuse end of all good eggs will be found warm upon applying the tongue to them. They will keep best in a cool place, secluded as much as possible from the air. Some recommend varnishing them.

ELD

Egg plant. See NIGHTSHADE.

Eglantine. See BRIAR the Sweet.

ELASTIC FLUIDS, are those bodies, generally invisible, which we call gases, air, vapour, &c.

Elastic Gum. See INDIAN RUBBER.

ELATERIUM, or *Extract of Elaterium*, is obtained from the fruit of the *momordica elaterium*, or wild cucumber, a perennial plant, native of the south of Europe, and flowering in June and July. It is cultivated in England, but does not survive the severity of our winters. The fruit is gathered in September, just before it is ripe; and the clear juice which runs from it, and that obtained by the expression of the fruit, are inspissated and form the elaterium of the shops.

Elaterium is a very powerful and useful hydragogue; but it excites sickness, severe vomiting, and excessive purging, and therefore requires to be administered with great caution. In ascites and hydrothorax, it produces sometimes the entire evacuation of the fluid, when other remedies have been tried in vain. The best mode of administering it is in divided doses of half a grain each, every hour until it begins to operate. It may, however, be given to the extent of three grains for a dose. See DROPSY.

ELDER, or *Sambucus*, in botany, a genus of plants consisting of five species; the following are the chief:

The *Nigra*, or Common elder, found wild in our own hedges. There are several varieties: some from variegation of the leaf; others of the berries, which are white, green, or black. The plant has an unpleasant smell, and some authors have reported that its exhalations are so noxious as to render it unsafe to sleep under its shade. The flowers and berries are said to be diuretic and aperient; and the bark is said to prove useful in dropsy. Of the green leaves as well as the flowers has been made an ointment, by boiling them in their weight of lard till they are crisp. A distilled water from the flowers is also found in the shops. The ointments are of about as much importance in medicine as lard; the distilled water is

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used by the ladies for a scent. As a medicine, therefore, elder appears to be of trifling importance. We must, however, except the crude juice of the ripe berries, which rubbed upon warts a few times, and being suffered to dry on the part, most commonly removes these unpleasant excrescences; care should be taken that the juice be applied as minutely as possible in, and round every wart; previously to the application of the juice, it is advisable to bathe the hands in warm water.

A wine is often made from the juice of the berries. See WINE.

The *Racemosa*, or Red-berried elder, a native of the south of Europe.

The *Ebulus*, Dwarf elder, or Danewort, with an herbaceous stem three feet high, is indigenous to many parts of Europe, and to our own hedges. A variety with cut leaves, and less widely creeping roots.

ELECAMPANE, or *Inula*, a genus containing thirty-five species, chiefly European plants, many of Asia, some of America, and a very few of the Cape; four indigenous to the meadows, sea-coasts, or ditches of our own country. The chief are:

The *Helenium*, or Common Elecampane, is an indigenous plant found in dry banks, flowering in July and August. The roots were formerly in some estimation as a tonic, and even now the powder of the roots, or more commonly a spurious adulteration of them, is still sold to illiterate pretenders to farriery. Its medical properties are of very little importance. But it is an ornamental flower, and on this account worth cultivating in shrubberies and borders.

The *Dysenterica*, found in the ditches of our own country.

The *Critikmoides*, found on our own sea-coasts.

They are all perennials. The first may be propagated by seeds, or offsets. The offsets should have a but, or eye, and may be taken from the old roots at any period after the leaves begin to decay, and before they shoot out again.

ELECTRICITY, or the **ELECTRIC FLUID**, are terms applied to a peculiar

ELECTRICITY

power or property, which appears to pervade, more or less, all nature, and which is productive of various surprising phenomena. Electricity also means that branch of natural philosophy, which investigates the nature and effects of this power.

Of electricity very little was known till about the middle of the last century: and, even now, we apprehend that our knowledge of its uses is still in infancy.

If a piece of glass, or sealing-wax, be rubbed on a piece of dry woollen-cloth, or silk, and instantly held over any small pieces of paper, they will be attracted towards it, raised on end, and be put otherwise in motion.

The power thus excited is called electric; and if the experiment be made in the dark, the glass and the wax will exhibit faint signs of light; which light is called the electric fire or fluid.

If the glass be of larger dimensions, and turned rapidly round by a winch and a wheel, instead of being rubbed backward and forward with the hand, and having a piece of silk to rub against it during its rotation, streams and large sparks of fluid fire will be elicited, which will fly round the glass, attract light bodies, and produce a pungent sensation if the hand be held near it. This glass, its cushion of silk, wheel, &c. are called an electrical machine.

The fluid or power obtained by this machine is one of the most wonderful in nature. It will pass along some bodies, and not along others; it may be received and diffused by sharp points; a superabundance of it in one place, acts as a repellent in the parts immediately adjoining; and it has a constant and violent tendency to diffuse itself throughout almost all bodies.

The bodies over which, or through which it passes freely, are all animals, most animal and vegetable substances, water, &c. all which are called *conductors* of electricity. But it will not pass over glass, sulphur, charcoal, silk, baked woods, or dry woollen substances; nor through air, except by force in sparks to short distances. This last must, how-

ever, be understood of the electric fluid when collected in considerable quantity: for that it exists in the atmosphere as well as in the earth at all times, and flows through them in certain proportions, we think there can be little doubt. Such bodies are therefore called *non-conductors*.

If a metallic *conductor*, provided with brass points, and elevated on glass legs, be placed opposite the revolving cylinder of an electrical machine, it receives by its points the electric power, which is condensed in the cylinder, but unable suddenly to escape in consequence of its being surrounded by air, and supported by glass legs: for both air and glass are *non-conductors*.

If the hand, or a metallic knob, be held within three or four inches from this metallic, or main conductor, a large spark will escape, which in the dark will be forked and of the colour of lightning: there will also be a snapping noise.

The forked, or zig-zag line which is often seen in the atmosphere, and which usually precedes a clap of thunder, is the electric fluid passing from the clouds to the earth, or from one cloud to another. It is now well known, that when this fluid comes in contact with a mixture of hydrogenous gas and atmospheric air, an explosion takes place, light and heat are evolved, and water is formed. Hence the cause of thunder, and the rain which often accompanies it. See **THUNDER**.

But the most wonderful power of the electric fluid, is in its suddenly contracting the muscles of animals when it passes through them from one place to another to obtain its equilibrium. The operation of the fluid thus applied is called a shock. The severity of the shock will be proportioned to the nature of the apparatus contrived for the purpose. When the apparatus is very large it is called a battery. Some batteries have been made so powerful as to kill an ox, melt gold, and produce all the phenomena of lightning.

A new mode of exciting this power was discovered by **GALVANI**; and the

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operation of electricity, in this way is called GALVANISM.

From what has been said, it is evident that, in a medical view, electricity must be regarded as a most powerful and extraordinary stimulant. But it can only be of use in diseases of debility; in those of an inflammatory kind it must be mischievous.

The application of electricity to the human body, has been found invariably to increase the sensible perspiration, to quicken the circulation of the blood, and to promote the glandular secretions: accordingly, many instances have occurred in which it has been applied with considerable advantage and success. It has been, however, found prejudicial in pregnancy and syphilis. That it may be eminently useful when properly applied in some cases of paralysis, suspended animation, and others requiring extraordinary means to excite the living powers to action we cannot doubt; but its application requires much skill and judgment. See GALVANISM.

ELECTUARY, a medicine containing several ingredients mixed together by a fluid into the consistence of honey. The London College have in their last Pharmacopœia, most unaccountably rejected this term. The form of an electuary is very well calculated for taking those medicines in substance, the doses of which need not be very accurately ascertained, and which are not extremely nauseous. But no volatile medicines, nor others where the accuracy of the dose is of importance, should be given in electuaries.

ELEMENTS are radicals, first principles, or the minutest particles of any substance, which can be no further divided or decomposed. Elements are also called simple substances.

Formerly, every thing in nature was divided, by philosophers, into four elements: namely, earth, air, water, and fire. But more accurate observation has demonstrated the fallacy of such division. Those bodies existing in nature, which have not been yet decomposed, and, therefore, must be considered, till they are so, as simple ho-

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dies, amount in number to between fifty and sixty. The following are the chief. Oxygen, chlorine, iodine, hydrogen, nitrogen, sulphur, phosphorus, carbon, boron, all the metals commonly so called, and other substances, now known to possess metallic properties, such are potassium, sodium, barium, strontium, calcium, magnesium, beryllium, aluminium, zirconium, yttrium, and glucium.

ELEMI, a resinous substance, commonly called Gum-elemi, obtained from the *Amyris elemifera*, a tree, native of Carolina and the Brazil. It has somewhat the appearance of the common frankincense, but its odour is very peculiar and strong. It is rarely used as an internal remedy; but a compound ointment of elemi is ordered by the London College thus: Take of elemi eight ounces; common turpentine five ounces; prepared suet one pound; olive-oil one fluidounce. Melt the elemi with the suet; then remove it from the fire, and mix in the turpentine and oil; lastly, strain the mixture through a linen cloth.

This ointment is stimulating and digestive; and is used to keep open issues and setons; and as a dressing to old ulcers.

ELEPHANT, or *Elephas*, in zoology, a genus, consisting of one species only. The elephant is the largest of quadrupeds. His body is of an ash-colour, seldom reddish or white, and thinly set with hairs. He has a very long prehensile proboscis, of which he makes great use; if cut off the animal dies; the eyes are small; the tusks, which are only in the upper jaw, are far extended beyond the mouth, resembling horns; they constitute the ivory of commerce, and sometimes weigh one hundred and fifty pounds each. The skin is thick, callous, and impenetrable to musket-balls, and yet sensible to the stings of flies; teeth two, near the breast; knees flexible, neck short; hoofs five on each fore-foot; four on each hind-foot.

The elephant inhabits the torrid zone, chiefly in India and Africa, in swampy

ELM

places, and by the sides of rivers; feeds on the leaves and branches of young trees, eating even the wood; devouring grain and hay voraciously; is gregarious, docile, long-lived, and sagacious, though the brain is small. Female gravid a year: the young suck the mother with their lips. Carries houses on its back, its guide sitting upon the neck; moves quickly, and swims dexterously: is armed for war by the natives of India.

The contrivances for taking wild elephants are various: the most common are, decoying them to places of security by means of female elephants, properly instructed, or hunting them into traps prepared for the purpose. When once they are caught, they are easily tamed, by observing the submission of other elephants.

An elephant is now exhibiting at Exeter Change, London, which is about twelve feet in length, ten feet high, and weighs four tons.

ELIXIR, a term formerly applied to many preparations similar to compound tinctures. It is now very little employed, except by quacks.

Elk. See **DEER**.

ELL, a measure of length, different in different countries. The English ell is three feet nine inches, or one yard and a quarter in length. In Scotland, the ell is 37 and 2-10ths, English inches. The Flemish ell is twenty seven inches, or three quarters of a yard.

ELM, or *Ulmus*, in botany, a genus consisting of seven species: four European; two American; one East Indian; and two natives of our own woods. They are as follow:

The *Campestris*, or common elm, found wild in our hedges; a variety with narrower leaves.

The *Suberosa*, or Dutch elm, having the bark of the branchlets cork-winged. Introduced into England towards the end of the seventeenth century. Wood inferior to the preceding. Three varieties: arboreous, shrubby, and dwarf.

The *Moutana*, Broad-leaved elm, or Wych Hazel, found wild in our lanes.

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The *Americana*, or American elm, a native of Canada: three varieties: red elm, white elm, and weeping elm.

The *Pumila*, or Dwarf elm; but improperly so named, as it is said to contend with the oak in height. A native of Siberia; timber close-grained and excellent.

The *Nemoralis*, or Horse-bean-leaved elm, a native of North America.

The *Integrifolia*, or Oriental elm, with leaves very entire, a native of the East Indies.

All these may be propagated by layers, or suckers, taken from the roots of the old trees. The first is the best method; the last most commonly practised. The elm delights in a stiff strong soil, though in such it grows slowly, but yields a much firmer and enduring timber. The toughness of elm is universally known; and where it can be purchased cheap, answers for the general purposes of building; but when cut into boards of an inch or less in thickness, it is very apt to warp, and, therefore, is not so suitable for doors or flooring as deal. It will not endure long when exposed to the weather. In every situation, it is very liable to be attacked by worms.

The inner bark of the common elm is diuretic. It is said also to be beneficial in some kind of tetters, and in leprosy. It is generally given in decoction, which is ordered by the London College thus: Boil four ounces of the fresh inner bark bruised, in four pints of water, to two pints, and strain. The dose is from four to six fluid-ounces twice or three times a day.

ELOCUTION, a term which has been variously applied to oral language, but it is, in fact, so similar to the next article, that we shall consider them as one and the same, to which, therefore, we refer.

ELOQUENCE, is the power of speaking with fluency, elegance, and effect, so as to impress the hearer with just ideas of the subject concerning which we desire to excite his attention.

Correct speaking, or the choosing and adapting of words and sentences

to the things or sentiments to be expressed, ought to be studied by every one, who is at all desirous of communicating his thoughts to others. If to the choice of words, and sentences be added such a pronunciation and emphasis, accompanied with those movements of the body, and changes of countenance and voice, as the different passions are known naturally and commonly to excite, and which are best calculated to excite and persuade others, the speaker is said to be eloquent; persuasion or conviction of the understanding, therefore, is one of the first objects of eloquence.

Eloquence ought on every account to become a general study. It is not, however, within our province to lay down the rules of this important art; but we may observe, that eloquence comprehends a certain degree of elegance, both in diction and manner; that the absence of that energy which approaches to violence, is compensated by well-chosen pertinency of language, fluency of utterance, and guarded chastity of address; that its excellence consists in a pleasing adaptation of language to the subject, and of manner to both; that it avoids all turbid emotions, but delights in animated description; that it seems partial to the pathetic; and that the elegance and graces which it loves, harmonize most easily and successfully with the softest and finest feelings of our nature. The power of eloquence is almost irresistible; it penetrates into the inmost recesses of the soul; and when exerted in favour of virtue and of truth, to which only it ought to be subservient, it adds a lustre and a charm to the severity of the moralist, and the teacher, that both attract and endear.

ELVERS, young eels; they are generally about the size of a common knitting wire, and about three or four inches long, of a dark colour; but on being boiled become white. Elvers are said to be the young of the conger eel, the *muræna conger*; of this we however very much doubt: for, by residing near the sea-coast, where they are caught in large quantities in the spring, we

know that the conger eel was not often caught, but that the common eel was in great abundance, both in fresh and salt water: we therefore conclude that elvers are the young of the common eel. They form a tolerably wholesome food when boiled; and are much less oleous than most other animals of the fish kind.

EMBALMING, the art of preserving the human body from putrefaction after death, for a long period of time. This art was very commonly practised among the Egyptians; and the mummies, which are still occasionally found, give evident proofs of it. These people sometimes placed also the embalmed bodies of their friends at table, during their feasts; but we hardly suppose that any modern European could be found desirous of imitating their example. We all know, that sooner or later, our mortal bodies must return to the original elements of which they are composed, and that a retardation of the decomposition by embalming is, in the eye of reason, of no importance whatever; on the contrary, the sooner the body is resolved into its first principles, the better for the living certainly, and we should hope, the increasing good sense of the age will not consider embalming an honour to the dead.

EMBROIDERY, a work in gold, or silver, or silk thread, wrought by the needle upon cloth, stuffs, or muslins, into various figures. There are several kinds of embroidery.

No foreign embroidery, or gold and silver brocade, can be imported into this country, upon pain of its being forfeited and burnt, and the penalty of 100*l.* for each piece. Nor can any person sell, or expose to sale, any foreign embroidery, gold, or silver, thread, lace, fringe, brocade, or make the same up into a garment, without paying a penalty of 100*l.*, and having it forfeited and burnt. The mercer in whose custody it may be found, is also liable to the same penalty. 22. Geo. II. c. 36.

EMERALD, a precious stone, found principally in Peru, and crystallized in regular six-sided prisms. Its colour is green, and it is either transparent or

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translucent. The emerald consists of 64.5 parts of silica, 16 of alumina, 13 of glucine, 3 of oxide of chrome, 1.5 of lime, and 2 of water.

EMERY, or *Smiris*, in mineralogy a genus of siliceous earth, consisting of alumina, silica, and a large quantity of iron; it is very hard, of a common form, opaque, attracted by the magnet, reddish when powdered, and not fusible alone; one species only, denominated the *poliens*, or polishing emery; found in Guernsey, Germany, Italy, and Spain; in the islands of the Archipelago; but is usually imported from the island of Naxos, always in shapeless masses, and mixed with other minerals; colour greyish black; has a granular texture, and is so hard as to cut all stones, except the diamond, upon which account it is used in different sized grains, and in powder for polishing metals. Its specific gravity is about 4.

EMETICS, those medicines which, taken into the stomach in a sound state, excite vomiting.

Emetics are of service, no doubt, in a variety of complaints, when administered with discrimination; and also, when taken immediately after swallowing poisons, &c. But there is a sort of fashion, or routine, in giving emetics in some diseases, against which we most strongly protest. In ague, for instance, some medical practitioners, in almost every case, order in the first place an emetic, than which nothing can be more like quackery.

The operation of an emetic is, from its very nature, one of violence, and, therefore, it should not be taken without a conviction of its utility. In plethoric persons, in inflammation of the intestines, in states of extreme languor and debility, in ruptures, and prolapses, in obstructions of the bowels, to the old, infirm, and emaciated, in a very weak state of the lungs, liver, or stomach, and to persons with a deformed structure of the body, emetics will often do harm, and should not be given without great precaution. See **CHAMOMILE FLOWERS**, **EMETIC TARTAR**, **PECACUANHA**, &c.

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EMETIC TARTAR, **TARTARIZED ANTIMONY**, or *Tartrate of Potash and Antimony*, is a combination of the acid of tartar, potash, and antimony. Emetic tartar is procured in small rectangular crystals of a white colour, inodorous, nearly insipid, and efflorescent. It should be bought in this state; but it is more commonly found in the shops, in a dull whitish powder, not easily distinguishable from many other saline matters in a pulverulent state.

This powerful salt is emetic, expectorant, alterative, and rubefacient; it also sometimes operates as a cathartic. It is certainly the most important of the antimonial preparations, and when the dose is properly apportioned, may supersede the use of all the others. It is given as an emetic in the commencement of fevers, in doses of from one to three grains, dissolved in distilled water. To produce a diaphoretic effect, the dose is from one-sixteenth, to one-fourth of a grain; and the same, or a smaller dose, combined with squill, ammoniacum, and camphor, operates as an expectorant. In very minute doses, combined with calomel, it is a powerful alterative in many cutaneous diseases. When three drachms of it are rubbed with one ounce of lard into an ointment, and applied to the skin, it occasions a local pustular eruption, and hence has proved serviceable in mania, white-swellings, and deep-seated inflammations, by exciting another action in the system.

When taken in large doses, emetic tartar acts as a corrosive poison, producing violent vomiting and purging, hiccup, a sensation of burning in the stomach, colic, fainting, difficult respiration, convulsions, and sometimes death. The treatment, when assistance is demanded in time, consists in carrying the poison out of the stomach, by bland oily liquids, freely taken, after which, the decoction of yellow bark may be freely administered, with opium, and local bleedings. For a more particular account of this mode of treatment, see **POISONS**.

Emetic tartar is more frequently em-

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played in *Veterinary practice* than any other preparation of antimony. Though a violent emetic when administered to the human subject, and to most quadrupeds, its effects on the horse in this way is very inconsiderable. It is commonly given in colds and fevers, to produce diaphoresis. The dose for such purpose is two drachms. In dogs it is a good emetic; the dose from two to six grains, according to the age and size of the animal. The effect of emetic tartar on cattle, has not been well ascertained; it should be therefore given cautiously, and by no means in such large doses as that prescribed for the horse.

EMMENAGOGUES, those medicines which possess a power of promoting that monthly discharge of a sanguineous nature, though not actually blood, nor when healthy, coagulating like blood, by the uterus, which, from a law of animal economy, takes place in certain conditions of the female system.

EMOLLIENTS, those substances which possess a power of relaxing the living animal fibre, without producing that effect from mechanical action. Warm water, warm and tepid vapours, mallows, marsh mallows, oil, fat, lard, &c. are emollients.

EMPIRIC, in medicine, a person who deviates from the line of conduct pursued by scientific and regular practitioners, vends nostrums, or sounds his own praise in the public papers; in a word, a **QUACK**.

EMPLOYMENT, in morals, is one of the best means to prevent impropriety of conduct. Although we are not prepared to say that idleness is the root of all evil, yet we are convinced that employment is the best cure for it. Whoever, therefore, issues prohibitory laws or mandates, without engaging the mind, and body too, in different pursuits from those which are forbidden, must not be surprised to find the laws or mandates set at naught. But mere physical employment alone does not appear to be of itself sufficient to effectuate that improvement in our moral well being to which the wise and the

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good most ardently aspire. The mind must be consulted in this moral process; and where a probable prospect is presented to it of comfort and of happiness, we can scarcely fail of success, even with persons the most unpromising. See **AMBITION**, **EMULATION**, and **PUNISHMENT**.

EMULATION, a desire, excited by the praiseworthy example of others, to imitate, to equal, and, if possible, to excel them. When emulation is directed to pursuits of virtue, it is unquestionably meritorious, and ought to be encouraged; but no one ought to be emulous of vice or wrong. In the hands of the moralist emulation may be made of considerable use. See **AMBITION**.

EMULSION, a soft and somewhat oily medicine, resembling milk; it is formed by an imperfect combination of oil with water, by means of mucilage, &c.

ENAMEL, in general, signifies a vitrified matter, interspersed with some solid substance, and possessing all the properties of glass except transparency.

The basis of all enamels is a pure crystal glass or frit, ground together with a fine oxide of lead or tin, prepared for the purpose, with the addition of a small proportion of subcarbonate of potash. The different colours of enamel are formed of this basis, and mixtures of various oxides: iron, copper, manganese, &c.

ENAMELLING, is the art of laying on enamel upon metals, and of melting it at the fire, or of making divers curious works in it at a lamp. It also signifies painting in enamel: an art which is held in great estimation on account of the peculiar and permanent vivacity of its colours. It is chiefly employed in miniature.

ENCYCLOPÆDIA, or **CYCLOPÆDIA**, a book containing an account of all the sciences. It is, however, occasionally used in a more restricted sense. Thus, a *Domestic or Family Cyclopædia*, such as our present work, is designed to embrace all those things most useful and necessary to be known by families in their domestic relations.

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Endive. See **SUCCORY**.

Engine. See **FIRE** and **STEAM**.

ENGLISH LANGUAGE, the language now spoken in England. We mention this subject here to observe, that we think it a duty incumbent upon every one to understand one language well; and that language, if it be a good one, such as the English is admitted to be, should be his native tongue. More especially is that language worth studying in which numerous and able writers, upon a vast variety of subjects, have conveyed to the public, and to posterity, their knowledge and their opinions. See **GRAMMAR**.

Engrafting. See **GRAFTING**.

ENNUI, a term borrowed from the French, implying wearisome or vexatious uneasiness, either of mind or body, or both. It is the too common attendant on those persons who have literally nothing to do: the children of luxury and sloth.

ENTHUSIASM, a state of mind in which we are led to think and imagine things in an extraordinary, yet probable manner. In a religious sense it implies a transport of the mind, whereby it fancies itself inspired with some revelation, impulse, &c., from heaven.

That enthusiasm which prompts us to consult the good of others, and is, at the same time, perfectly consistent with their intellectual and personal liberty, is good; but that which induces an attempt at an undue influence over the minds or persons of others, which assumes a dictatorial and infallible air, and arrogates a knowledge which no reason can warrant, and no personal consideration command, is a most mischievous quality of the human mind, and ought most sedulously to be guarded against, upon all occasions, and on every pretence.

ENTOMOLOGY, the science or knowledge of the structure, functions, manners, modes of increase, and habitations of the innumerable tribes of insects. This science is more especially deserving the study of the domestic economist, not only as an amusement, but by it we become better acquainted with blights,

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flies, slugs, and other destructive insects; and we may also, most probably, acquire a better method than is now known, of preventing their destructive ravages.

ENVY, pain felt, and malignity excited, at the sight of excellence, or the happiness of others. He who is envious cannot be benevolent: and he who is benevolent cannot be envious. The best remedy, therefore, for this degrading and injurious state of mind, is, unquestionably, the cultivation of benevolence, and the benevolent affections.

EPIDEMIC, a term applied to diseases which attack many people at the same season, and in the same place. Thus putrid fever, plague, dysentery, &c., are often epidemic. Epidemic diseases are commonly supposed to be contagious.

EPIGLOTTIS, the cartilage at the root of the tongue, which falls upon the glottis or superior opening of the larynx. Its use is to cover the larynx, so that no food may pass into it during the action of swallowing. See **GLOTTIS** and **LARYNX**.

EPILEPSY, a disease in which the patient is usually attacked with convulsions, and falls down suddenly, hence sometimes called the *Falling sickness*. It is, however, frequently preceded by a pain in the head, lassitude, some disturbance of the senses, unquiet sleep, unusual dread, dimness of sight, a noise in the ears, palpitation of the heart, coldness of the joints &c.

The causes of this disease are not well ascertained. It attacks strong as well as weak persons; and in those who are subject to it, excess in drinking, eating, violent passion, or venery, &c., will certainly bring on the fit. Indeed, we have known an excessive quantity of food eaten at dinner, in a person otherwise healthy, produce epilepsy.

If epilepsy comes on before the time of puberty, some hope may be entertained of its going off at that time; but it is a bad sign when it attacks about the 21st year, and still worse if the fits grow more frequent, as by them the animal functions become injured, as well

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as the mind, the patient frequently becoming stupid or foolish. It sometimes terminates in melancholy or madness, and sometimes in apoplexy or palsy. It is at all times a most serious and alarming disease. But it has been, notwithstanding, sometimes removed by the appearance of cutaneous diseases, such as the itch, small-pox, measles, &c. While the disease is recent we must not despair of a cure; but if it be of long standing, or hereditary, there is very little reason to expect that it can be removed.

Perhaps no complaint has engaged more the attention of the faculty than epilepsy; and there is none, perhaps, in which, at the present moment, there is more diversity of opinion as to its cure. It is not, however, probable, that the domestic prescriber can, or will attempt to effect the removal of this disease. There can be no doubt, however, that attention to food and drink is of great importance in its prevention; and that excesses of every kind, flatulent food, and violent exercise, should be avoided; the bowels should also be kept regularly open by aloetics.

During the fit, the greatest care should be taken that the patient does not injure himself by the violence of his struggles; he should be placed on a bed, or other soft place. His clothing should be every where loosened, and the head moderately elevated. As soon as possible some substance should be introduced and held between the teeth, to prevent their closing on the tongue. No earthenware or glass should be used for the purpose of offering drink, lest from the delirium or convulsions attendant on this complaint, it should be broken in the mouth. Should it appear that the patient has been drinking too freely of spirituous liquors, or has loaded his stomach with indigestible and offensive matters, the first opportunity should be seized of getting a pretty strong emetic into the stomach. In this case, as soon as the stomach is emptied, the convulsions generally subside.

It does not appear that bleeding in the fit, although sometimes adopted,

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is of any permanent advantage in the cure, and therefore it ought not to be employed.

The symptoms of *EPILEPSY* in the HORSE, are reeling about, and then falling down; sometimes he rears up suddenly and falls. He often lies in a state of insensibility for several hours, the pulse continuing to beat, and accompanied with a disturbed kind of breathing. There is also sometimes a violent motion of the legs.

Bleed plentifully, and if the fit continue, give the following drench: Take of fetid spirit of ammonia, one ounce; of compound spirit of lavender, half an ounce; of water twelve ounces; mix for one dose. To prevent a return of the fit give a mild purgative.

EPSOM SALT, SULPHATE OF MAGNESIA, or BITTER PURGING SALT, was formerly obtained by boiling down the mineral water found in the vicinity of Epsom. It is at present obtained almost exclusively, from the liquid called bittern, the residual brine left after the crystallization of sea-salt. It may be, however, made by a mixture of magnesia and sulphuric acid. Its crystals are small, four-sided prisms, with reversed dihedral summits, or four-sided pyramid. Its taste is bitter, and it is soluble in its own weight of water at 60°. Exposed to a red heat it loses its water of crystallization, but is not decomposed. When pure it effloresces, but the sulphate of magnesia found in the shops, generally contains some muriate of magnesia, which renders it deliquescent. It should, therefore, be kept in close-stopped jars. It is often adulterated with glauber salt.

This salt is purgative and diuretic; it operates readily, without griping; and, notwithstanding its nauseous taste, is retained by the stomach when it rejects almost all other things, especially when administered in small and repeated doses, largely diluted, or united with acidulated infusion of roses. In these forms it is a useful purgative in the dry belly ache, puerperal fever, and in all acute diseases. It is also used in stimulating clysters. By moderate exercise

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in the open air, while taking this salt, the purgative effect is diminished, and its diuretic power increased. The dose is from half an ounce to two ounces, dissolved in water-gruel, or any other vehicle, and taken either at once or in divided doses, frequently repeated. The most usual dose, however, for a purge for an adult is, one ounce taken at once. This salt is now become a much more fashionable laxative than sulphate of soda, or glauher salt: but where a brisk debilitating purgative is wanted, we think the latter is preferable. See **MAGNESIA**.

EPSOM WATER, is that saline spring which rises at the distance of about half a mile from the town of Epsom, in Surrey. Its principal ingredient is sulphate of magnesia. See the preceding article. Nothing sulphureous or metallic is ever found in this spring. It may therefore be easily imitated, by dissolving half an ounce of the common Epsom salt of the shops in a quart of pure water. Epsom water is said to be useful in hypochondriasis, and other dyspeptic complaints.

ERRHINES, medicines which when applied to the internal membrane of the nose, excite sneezing, and increase the secretion, independent of any mechanical irritation.

ERROR, a mistake of the mind, in giving assent to a thing, or proposition, which is not true. The principal causes of error are want of time, neglect of experiments, regard to antiquity and authority, undue admiration of things known, the artifices of teachers; but the chief of all is superstition. The best, and perhaps the only effectual cure for all kinds of error, is **INQUIRY**, and a suspension of the judgment till inquiry be made.

ERUPTION, a bursting forth. In medicine, the risings on the skin, in the measles, small-pox, cow-pox, miliary fever, itch, scurvy, &c. are called eruptions.

ERYNGO, a genus of plants consisting of eleven species, chiefly natives of the south of Europe. The following are the chief: the *Aquaticum*, or Rattle-snake-weed, a native of Virginia.—The

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Campestris, found in our own salt marshes. The *Maritimum*, or Sea holly, found on the sandy shores of our own country; formerly used medicinally, but of no importance. The root is occasionally sold in a candied state, and eaten as a sweetmeat.—The *Alpinum*, a hardy perennial, well worthy a place in every curious garden, where its uncommon form and beautiful colour are very attractive.

ERYSIPELAS, *Saint Anthony's fire*, or *Rose*, is a disease which most commonly attacks the face, although it sometimes appears on other parts of the body.

This affection of the skin is of a mixed and not very bright red colour, readily disappearing upon pressure, but quickly returning again; the redness is not regularly circumscribed, but extends unequally; and continues most usually to spread upon the neighbouring parts with a pain like that from burning; blisters sometimes of a small, sometimes of a larger size succeed; and as they go off, the skin peels; and sometimes they terminate in gangrene.

When this disease attacks the face, the patient experiences first of all a cold shivering, succeeded by a hot stage, in which there is more or less drowsiness, with a confusion of the head, and sometimes delirium. The affection of the skin appears either on the first, second, or third day of the fever, frequently possessing by degrees the whole of the face; sometimes the hairy scalp, and even extending on to the neck. The whole face also becomes much swelled, and the eyelids so much so, that the patient is sometimes for a day or two totally blind.

The disease continues in general about eight or nine days, the fever not abating after the coming on of the affection of the skin; and its favourable termination is usually about this period. But in other cases the stupor and delirium increase, and the external affection being communicated to the brain, the patient is carried off about the same period.

Erysipelas may be produced by the application of heat, or the sudden or

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partial application of cold, especially when the body is in a heated state. External injuries of various kinds, as wounds, punctures, and even the slightest scratches, are often succeeded by this affection of the surrounding parts. The application of poisons, more particularly of the animal kingdom, often produces this disease. Persons who have once laboured under it are often liable to its return.

When it exists only in a trifling degree, and without any, or but little affection of the system, or any other alarming symptom, there may be no necessity for calling in professional assistance: since by attention to the following advice, the disease may be in such slight cases removed with the utmost safety.

The body should be kept in a laxative state by gentle aperient medicines, such as lenitive electuary, sulphate of magnesia or soda, tamarind whey, &c.

The patient through the day need not be confined to his bed; it being sufficient that he avoids exposing himself to a cold atmosphere.

At bed-time the patient may take a few grains of antimonial powder, drinking freely of weak wine whey, or warm barley water, with a small quantity of nitre to procure a gentle perspiration. Animal food should be avoided except under peculiar circumstances. Sago, tapioca, barley-water, panada, &c. are the most proper articles of diet. The thirst may be quenched with toast and water, or lemonade.

When, however, erysipelas exists in a more severe form, the best advice we can give is to consult an able physician.

It does not appear that any application to the skin in this eruptive disease is often of service, and therefore it should be avoided.

Erysipelas in old persons, and those who have lived freely, is generally attended with danger, and requires the best medical skill. In youth and middle age it is seldom dangerous, except when accompanied with much fever, or when it extends over a considerable surface.

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ESCHALLOT, or *Allium eschallot-cum*, a species of garlic, a native of Palestine, is well known in our gardens as an esculent vegetable. It is propagated entirely from the roots; it never producing seed in this country. The roots are planted about the end of February, in beds or furrows, at the distance of about three inches from each other. Towards the end of June the stalks are tied up, and in the course of another month the roots are pulled out of the earth, dried, and afterwards preserved in some dry and airy place.

The roots are similar in their qualities to those of the onion. The young shoots, in the spring form a very agreeable salad when mixed with mustard cress, &c. But they do not suit many stomachs; producing the same unpleasant heat as the onion. Their medicinal virtues are of no importance.

ESCHAROTICS are those substances which possess a power of destroying the structure of the various solid parts of the animal body to which they are directly applied. Sulphate of copper, burnt alum, lunar caustic, the sulphuric and nitric acids, &c. are escharotics.

ESPALIER, a fruit-tree, spread in the same manner as wall trees, but supported in its position by stakes or framing. Espaliers are principally useful where room in the garden is of importance, and where the quality rather than the quantity of the fruit is principally considered.

ESSENCE, in pharmacy, the chief properties, or virtues, of any simple, or composition, collected in a narrow compass. It also means a solution of several essential oils and other matters in rectified spirits of wine. And sometimes it implies the essential oil itself.

essence of Ambergris. See **AMBERGRIS**,
 ————— *Bergamot.* See **BERGAMOT**,
 ————— *Colts-foot.* See **CAMPION**,
 ————— *Lavender.* See **LAVENDER**,
 ————— *Lemon.* See **LEMON**,
 ————— *Peppermint.* See **PEPPERMINT**,
 ————— *Spruce.* See **SPRUCE**.

ESSENTIAL OILS, those oils

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which are obtained by distillation from various vegetable substances. They are generally characteristic, both in smell and taste, of the substances from whence they are obtained. And most of them are dissolvable in rectified spirits of wine. See OIL.

Ether. See **ETHER.**

ETHEREAL OIL, commonly called **OIL OF WINE**, is obtained by distilling the liquor left after the distillation of ether, with a gentle heat, until a black froth swells up; the retort is then immediately to be removed from the fire. To the liquor in the retort add water sufficient that the oily part may float upon it, which being taken off, let as much lime-water be added to it as will neutralise any acid it may contain. Lastly, take off the ethereal oil, after it has separated. It is only used as an ingredient in compound spirit of Ether. See **SPRITS.**

ETHICS, the science of moral philosophy, or that knowledge by which man is best enabled to consult and obtain both individual and collective happiness: happiness being the end and aim of every rational being. The study and practice of morals, therefore, is the first of all duties, to a thorough knowledge of which our efforts ought to be continually and unceasingly directed, and from which no one, in any class or station in society, can by any possibility be exempt.

ETHIOP'S MINERAL, or, more properly, **BLACK SULPHUR OF MERCURY**, is prepared by rubbing together, in a glass, or marble mortar, with a glass or marble pestle, equal parts of mercury and flower of sulphur, until the globules of the mercury altogether disappear, and the whole is become a black powder.

This preparation is alterative and anthelmintic. It is chiefly employed in scrofulous swelling, and in cutaneous affections, and has been found useful in the destruction of the worms called *ascarides*. But it is an uncertain preparation. The dose is from five grains to half a drachm, given twice or three times a day.

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EUPHORBIIUM, a gum resin, the production of several species of the *Euphorbia*; but obtained principally from one said to be a perennial, succulent, shrubby plant, a native of Africa, where it grows in great abundance. See **SPURGE.**

Euphorbium is inodorous, and when first chewed has little taste; but it soon gives a very acrid burning impression to the tongue, palate, and throat, which is very permanent and almost insupportable. It also, when applied to the nostrils, excites powerful sneezing; and possesses also emetic, cathartic, and rubefacient properties. But owing to the violence of its effects, it is now never used internally; nor, as a snuff, can it be used alone, for it occasions inflammation and bleeding at the nose, &c. When properly diluted with starch, or any other harmless powder, and used cautiously it is a useful errhine in lethargic deafness, palsy, amaurosis, and similar cases.

Euphrasia. See **EYE-BRIGHT.**

EUSTACHIAN TUBE, in anatomy, arises in each ear, from the anterior extremity of the tympanum, and runs forward and inwards, in a bony canal, which terminates with the petrous portion of the temporal bone. It then goes on, gradually becoming larger, and at length ends behind the soft palate. Through this tube the air passes to the tympanum or drum of the ear.

EVACUATIONS, in the animal economy, are those things which are expelled regularly and naturally from the human body; such as the abdominal faeces, the urine, the perspiration, &c. Whilst the evacuations continue regular, the animal functions are usually performed well; and whenever they become obstructed, disease is generally the consequence; hence the necessity of attending to the evacuations. See **COSTIVENESS, EAR, NOSE, PERSPIRATION, URINE, &c.**

EVAPORATION, is the conversion of fluids, chiefly of water, into vapour.

Evaporation is the means by which nature supplies the whole vegetable

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kingdom with the dew and rain necessary for its support. It is continually going on, not only from the surface of the ocean, but also from the earth, leaves of plants, trees, &c.

One of the most beneficial effects of evaporation is to cool the earth, and prevent it from being too much heated by the sun. This power of producing cold by the evaporation of water and other bodies, has been latterly much attended to; and many phenomena, otherwise inexplicable, are by it easily explained. Thus, if water be poured over a vessel containing liquor, it is well known that the evaporation of the water cools the liquor within. Upon the same principle, if water be sprinkled upon a floor, or the street, the evaporation of it cools the air by carrying off the abundant heat. Upon the same principle it is that rain, in hot weather, cools the air. Upon the same principle too, it is, that ablution of the skin, in the hot stage of certain fevers, is beneficial by carrying off the superfluous heat; and upon the same principle, also, are some head-aches, attended with heat, cured by bathing the forehead with cloths dipped in water, &c. The wisdom of the perspiration by the skin, is also equally manifest as a process of evaporation; for whilst the pores of the skin remain rigid in hot weather, as well as in many fevers, the body labours with oppressive heat; but no sooner does the perspiration, and of course evaporation, begin, than the superfluous heat is carried off, and the pain produced by the excess of heat relieved. See **DEW**, and **RAIN**.

EVENING, that part of the day which commences a little before sunset, and continues for an hour or two afterwards. But evening is a very indefinite term.

Evening air, although in the summer season agreeable, is not desirable for health. Invalids, and valetudinarians, should therefore avoid it.

EVERGREEN. In botany, those trees which continue their verdure, leaves, &c., throughout the year, are called evergreens. Evergreens, not-

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withstanding, unless peculiarly obstructed in their growth, shed their leaves regularly every spring, but as the old leaves do not fall off, till new ones appear, evergreens are never wholly devoid of leaves.

Evergreens are not only ornamental, but when planted at a proper distance from dwelling houses, contribute to the salubrity of the air.

Evergreen Oak. See **OAK**.

EVERLASTING, in botany, a term applied to various plants, whose roots continue to send forth annual stalks and flowers for many years.

Everlasting Pea. See **PEA**, the sweet.

EVIDENCE, or **TESTIMONY**, the proofs, whether oral or written, by which any given fact or circumstance may be known to be true.

The best of all evidence is the evidence of the senses; no written evidence can be equal to it: the same may be said of hearsay evidence. When, therefore, our assent is required to any thing contrary to the evidence of our senses, and contrary to the nature of things, and the constitution of the universe, our judgment ought to be withheld, till, by a concurrence of evidence, such extraordinary circumstance, whatever it might be, is rendered indubitable. Want of caution, relative to the nature of evidence, has led mankind into a thousand reveries and errors, which a modest diffidence of opinion only might have prevented.

We have said that the best of all evidence is the evidence of the senses; but we know also that our senses frequently mislead us; and that therefore the evidence even of the senses is not always to be depended on. A thorough conviction of this truth, ought to teach men to receive evidence, even of the senses, particularly in questions of moment, whether civil or criminal, with extreme caution and circumspection.

EVIL, in morals, that conduct which is productive of unhappiness, or pain, either to ourselves or others.

Upon the cause of the existence of evil, both in the moral and the natural

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world, it is not here our purpose to inquire. It is sufficient to observe, that many of the evils of life originate in the misconduct of men towards each other, rather than in the nature and constitution of things; and that when men are actuated by those principles of benevolence and justice which it is our aim in this work to inculcate and promote, much of the moral and natural evil of which we now complain will be no more.

Ewe. See **SHEEP**.

EXAMPLE, a pattern; that which is proposed to be imitated. In morals, every person's conduct operates upon some one or another, by whom he is surrounded or known, in the nature of example: for man is the most imitative of all animals. The importance, therefore, of propriety of conduct in every one cannot be too strongly inculcated and enforced. See **CIRCUMSTANCE**, **CHARACTER**, and **EDUCATION**.

Excess. See **DRUNKENNESS**.

EXCHANGE, in commerce, that process by which one thing is given for another. The first commerce among mankind was by exchange.

Exchange also denotes the business or trade of money, as carried on between one place and another, by means of bills of exchange. See **BILL**.

Exchange denotes also the difference between the value of money in one country and another. In this sense, the exchange is continually fluctuating.

EXCITABILITY. In all the states of life, man and other animals differ from themselves, in their dead state, or from any other inanimate matter, in this property alone, that they are affected by external agents, as well as by certain functions, peculiar to themselves, in such a manner so that the phenomena peculiar to the living state are produced." The external agents are heat, diet, and other substances taken into the stomach, the blood, the fluids secreted from the blood, and air. The functions of the system itself producing the same effect are muscular contraction, sense or perception, and the operation of the brain, in thinking and

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in exciting passion and emotion. This power or property of living animal bodies, is termed excitability. See the next article.

EXCITEMENT, the effects of the exciting powers or stimulants, whether heat, diet, other substances taken into the stomach, muscular exertion, or the passions of the mind, &c., acting upon the excitability.

EXCITING CAUSE, in medicine, the occasional cause; that which, when applied to the body, under a certain predisposition, excites a disease. The same explanation applies to morals; but the exciting cause of any moral action is more commonly called **OCCASION**, which see.

EXCORIATION, or fretting of the skin, sometimes arises from inattention to cleanliness in infants; it also occurs in persons unaccustomed to ride on horse-back, to fat persons who use unusual exercise, and to those who are bed-ridden.

In children, the application of a little fine starch, or finely levigated calamy, generally effects a cure. In adults, the resin plaster, spread upon leather, is commonly efficient. If, however, the true skin be affected, and considerable pain is produced, it should be treated as a simple wound; and if there be much swelling, an emollient poultice may be necessary.

EXCREMENT, whatever is separated or excreted from the body as useless, such as the urine, the sweat, and the fæces, to the last of which substances the term excrement is, however, most commonly applied.

EXCRESCENCE, any preternatural formation of flesh, or other part of the body, as wens, warts, &c. The term excrescence is also applied to any substances preternaturally growing upon trees and other vegetables.

EXCRETION, the separation or secretion of those fluids, and other substances, from the animal body, which are supposed to be useless, such as the urine, the perspiration, the alvine evacuations, &c. See **COSTIVENESS**.

EXECUTOR, a person appointed

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by a testator, to carry into execution his will and testament after his decease.

The first duty of an executor or administrator is to bury the deceased in a suitable manner: but if the executor exceed what is necessary in this respect, it will be a waste of the substance of the testator.

The next thing to be done by the executor, is to prove the will. But as the executor derives his authority from the will, and not from the probate, he is authorized to do many acts in execution of the will, even before it is proved, such as releasing, paying, or receiving debts, assenting to licenses, &c., but he cannot proceed until he has obtained probate.

By stat. 37. Geo. III. c. 9. s. 10. every person who shall administer the personal estates of any person dying, without proving the will of the deceased, or taking out letters of administration, within six calendar months after such person's decease, shall forfeit 50l.

EXERCISE, in medicine, such motions of the body, or employments of the mind, as produce effects on the animal economy. Exercise is one of the most powerful stimulants, hence its importance as a remedial process.

We have, in various parts of our work, insisted upon the necessity of exercise for producing that agreeable state of the body called **GOOD HEALTH**. As employment of the mind is the best remedy for our mental, so, it cannot be too often reiterated, is exercise the best remedy for our corporeal evils.

There is no royal road to health of either mind or body, and he who attempts to obtain it without adopting the means both necessary and common to the whole family of Adam, will sit down most woefully disappointed.

But although we insist upon the necessity of exercise for the preservation or obtaining of good health, we think, that in taking exercise of any kind, *merely* for the purpose of obtaining that desirable blessing, we shall very frequently be disappointed: for in thinking a great deal about our own health,

a sort of mental malady is induced, which, very often, defeats the good that exercise would otherwise impart.

What we wish to impress upon our readers is, the necessity of exercise, or moderate labour, in order to obtain good health, and at the same time, that such exercise, or labour, should tend to some useful end, either to ourselves or to our species. To ride, or walk, or labour, merely for health, without any other ultimate object for our exertions, is by no means so salutary as to ride to visit a sick or desolate family, whom we have it in our power to relieve, or may excite others to relieve; or to walk to console a friend, whom some dire calamity has overwhelmed; or to plant even the lowly cabbage in our garden, with the prospect of seeing it grow, and ultimately cutting it, and eating it after it is boiled.

If those persons who follow, what is commonly termed the gentlemanly amusement of hunting, and who afterwards too often become boisterous with bacchanalian juices, would take up occasionally, the woodman's axe, the mower's scythe, or the reaper's hook, there can be no doubt of the beneficial effect of such exercise upon their health.

It would be well, therefore, if the upper classes of society, who have been taught to consider labour as degrading, were to shake of the leading-strings in which they have been so long held. And when the lady who complains of ennui, and every species of lassitude, beholds her cook, or her housemaid, exempt from such troublesome visitants, she will find it both to her mental and bodily interest, to superintend occasionally, the dressing of a turkey; nor will her muscles be at all injured, by now and then tossing up a heavy feather or down bed. Nay, we really think she will be more likely to find health on her knees, with a brush in her hand, and a pail of water by her side, than she will in the soft and perfumed gales of a drawing room, or in the scented lounge of a bazaar.

To the gentleman who scarcely touches the earth, except when he descends

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from his carriage, we would say, look at your own gardener : whilst you scarcely know what a sound sleep is, he sleeps soundly ; not a dream flits over his repose, and whilst you consume the early morning in tossing on your bed of down, he arises to labour, to cheerfulness, and to health.

We put these strong cases, because we are desirous of exciting attention to this neglected subject. At the same time, we beg to assure the ladies, in particular, that we have not the least wish to do any violence to their feelings ; but they will permit us to inform them, that without moderate exercise, they cannot expect to possess good health ; and we feel assured, that that exercise, or labour, whatever it be, is the best, which is occupied in providing for the wants and conveniences of ourselves and families, or, perhaps most of all, of our fellow-creatures.

Having said this, we would not be misunderstood ; long-continued labour, or exercise of any one kind, is by no means to be adopted : for the best and most powerful stimulus, becomes by long use of little importance. Thus, bodily labour to the citizen, may be a powerful excitement, whilst to him who is always labouring, it is weak. Horse-exercise again, is excellent, to a person who is usually a walker, or accustomed to sedentary employment ; walking, to the horseman, is great labour, and therefore, 'for his health, often highly advantageous.

We have no objection whatever to recreative exercises, of various kinds, when they are adapted to the strength ; but all violent exercises, such as long and continued dancing, &c. are highly improper.

In addition to bodily exercise, the exercise of the mind, in the preservation of good health, must not be forgotten : and where a due employment of both the mental and bodily faculties is kept up, we shall not often fail in our endeavours to obtain it.

In all transitions from an inactive to an active life, from indolence to labour, the change should not be effected at once,

but gradually : thus, to a person who has not been accustomed to walk, six miles a day may be an over dose at first ; the same may be said of riding, digging in the garden, &c. &c. : one hour at any of such novel occupations, may be at first, as much, or even more, than the constitution will bear : but use will soon enable the person, disposed to make the experiment, to increase the dose.

Perhaps a more strong exemplification of the advantages of both bodily and mental occupation, cannot be mentioned than in the person of the writer of this book. With a constitution into which disease has made many inroads, he left London in October, 1819, at which time the printing of this work commenced. TWICE a week he *walked* to London, a distance of seven miles, the same day, and back again, throughout the whole winter, in every kind of weather, and he very often did not leave the metropolis till half-past eight o'clock at night ; during the whole period he wore a great coat but twice ; he often walked twenty miles a day ; once indeed, thirty-six miles. He generally wrote four hours, at least, every day, sometimes ten, not excluding the days he went to London, and he also took occasional excursions to the Sydenham Hills, to Blackheath, Lee, and Greenwich, and he has not passed a winter for years, so free from every kind of complaint, both mental and corporeal. His motives for such weekly ambulations were, to hear scientific lectures, at one of the London Institutions, and to acquire, through various channels, scientific and other literary information ; and he preferred walking, because he knew that neither the inside nor outside of a coach was so advantageous for health.

EXERCISE, of Animals. Almost all domestic animals require the stimulus of exercise, especially the horse. Such of these animals as stand too much at rest, at the same time are full fed, and breathe constantly a hot, foul, stagnated air, in close stables, cannot long retain good health ; it is, therefore, of great importance that they

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should be constantly exercised ; but, although regular exercise, or labour, is necessary to preserve the horse in health, he should not be suddenly put to such active exertions as he has not been accustomed to : for all sudden changes are injurious. He should, therefore, be brought to labour by degrees ; to young horses in particular, this is more peculiarly applicable.

EXFOLIATION, the process by which the corrupted part of a bone separates from the sound.

EXHALATION, generally speaking, denotes effluvia, steams, or gases, which arise from the surface of the earth, or other bodies, most commonly in the form of vapour.

EXISTENCE, the actual possession of being. That physical existence is a good, we think admits of little question ; how much better our existence might be made, were every individual to study the general happiness, it is impossible to say ; but better it certainly would be. That the greatest evils of this life, originate in the misconduct of ourselves, there can be no doubt. When our institutions shall be more deeply imbued with such truths, and education takes a wider range, which it assuredly will, the evils of which we complain, in our existence here, must greatly decrease.

EXOTIC, a term implying foreign, or extraneous ; but it is chiefly applied to plants, which are natives of foreign countries. The generality of exotics, or exotic plants, do not thrive in Great Britain, without some peculiar care and culture, whence the use of hot-beds, hot-houses, &c.

EXPECTORANTS, those medicines which are employed to increase the discharge from the lungs, &c.

EXPECTORATION, that discharge which is made by coughing, from the lungs, &c.

Expenditure. See **ECONOMY**.

EXPERIENCE, that knowledge which is acquired by long practice : or, in other words, a series of experiments. Experience is the best test of truth ; at the same time, it should never be for-

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gotten, that many persons have passed long lives in gross and incurable error. It appears too that the human mind is not commonly accessible to new truths, after a certain period : when the celebrated Harvey discovered, or rather demonstrated, the circulation of the blood, it is said that no physician of his age adopted the doctrine, who had passed his fortieth year : a powerful lesson to all pertinacious holders of opinion ! Although we would not encourage doubt upon common occasions, yet surely, if we mean to profit by experience, the mind should be always kept in a *disposition to be taught*.

EXPERIMENT, a trial of any thing ; or something done in order to ascertain what is at present uncertain, or to discover what is unknown.

EXPERIMENTAL PHILOSOPHY, is that which proceeds on experiments, or which deduces the laws of nature, and the properties and powers of bodies, and their actions upon each other, from sensible experiments and observations. It is to experimental philosophy, that the moderns are indebted for the superior knowledge which they enjoy, compared with that of any preceding age ; and we may most confidently predict, that whilst experiments constitute the basis of our knowledge, and are unremittingly pursued, mankind must still continue to improve : truth can be obtained in no other way.

Expiration. See **BREATHING** and **RESPIRATION**.

Explosion. See **CARBURETTED HYDROGEN**, **ELECTRICITY**, **GUN-POWDER**, **THUNDER**, &c.

EXPRESSED OILS, such oils as are obtained by pressing the substance containing them, as olives, which yield olive oil, almonds, linseed, &c.

EXTRACTIVE MATTER, or *Extractive principle*, a substance contained in most vegetables, and generally forming the principal ingredient in the pharmaceutical preparations called *Extracts*. It is soluble in water, and the solution is of a brown colour : it is insoluble in alcohol, unless the alcohol contain a small portion of water. By

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repeated solutions and evaporations it may be rendered scarcely soluble in water.

The following substances may be considered under this head :

Ulm, obtained from the bark of the *Elm* :—*Polychroite*, from *Saffron* ;—*Hematin*, from *Log-wood* ;—*The Bitter Principle*, from *Quassia*, and other bitter vegetables ;—*Picrotoxin*, a bitter poisonous substance, obtained from the *Cocculus Indicus* ;—*Nicotin*, from *Tobacco* ; it is colourless, volatile, and poisonous ;—*Asparagin*, from *Asparagus* ;—*Fungin*, from *Mushrooms* ;—*Inulin*, from *Elecampane* root ;—*Emetin*, from *Ipecacuanha* ; it is highly emetic ;—*Tannin*, from *Oak-bark*, and various other vegetables. See TANNIN.

EXTRACTS, in pharmacy, are those preparations obtained most commonly by boiling vegetable substances in water, and evaporating the strained decoction in broad, shallow vessels, either to the consistence proper for forming pills, or to a yet harder state, so that the substance may be reduced to powder. The former, with some few exceptions, is the state in which extracts are commonly kept.

Extravagance. See **ECONOMY**.

EXTRAVASATION, the act of forcing, or state of being forced out of the proper containing vessels ; it is applied most commonly to the bursting or breaking of blood-vessels, whether by accident or disease. See **ANEURISM**, **BRUISE**, **WOUNDS**, &c.

EYE, or *Oculus*, in anatomy, the organ of sight, situated in a socket called the orbit, at the side of the root of the nose, which is composed of seven bones. The external parts of the eye are, the eye-brows, the eye-lids, the eye-lashes, the lachrymal gland, lachrymal caruncle, nasal duct, muscles of the bulb of the eye, and the fat of the orbit. The internal parts are those which form the bulb of the eye, properly so called ; they consist of eight membranes, viz. the sclerotic, transparent cornea, the choroid membrane, iris, uvea, retina, hyaloid, and capsule of the crystalline lens ; two chambers, one

anterior, and the other posterior ; and three humours, the aqueous, crystalline lens, and vitreous humour. See **IRIS**, **PUPIL**, and **RETINA**.

The eye is extremely delicate, and in consequence subject to various accidents and diseases. But too much care cannot be taken in meddling with this finely-constructed organ.

The following are the most common diseases of the eye :

Specks, films, or excrescences on the eye. Specks are sometimes formed upon the white part of the eye, but more frequently upon the cornea. In the former case they are seldom attended with much inconvenience, but in the latter they are often the cause of partial or total blindness. They are usually the consequence of inflammation, and when the sight is affected by them, surgical assistance becomes necessary. Excrescences require also able surgical assistance.

Abscesses in the globe of the Eye, Dropsical swellings of the Eye, Cancer of the Eye, and *Fistula Lachrymalis*, require the attention of an experienced surgeon.

A Protrusion of the Eye, if it proceed from an enlargement of the eyeball, from a dropsical swelling, or from an old wound or abscess, requires the attention of an experienced surgeon ; but if it arise originally from the small-pox, scrofula, &c., or from old age, the eye should be bathed daily with cold water, or with some astringent solution, such as goulard water.

For *Inflammation of the Eye* see **OPHTHALMIA**, and **BLOOD-SHOT EYES**.

For *Cataract* see **GUTTA SERENA**.

The eye is also subject to many other diseases which we cannot enumerate ; but we exhort our readers to guard against the eye-waters and other nostrums, too commonly prescribed by pretenders and quacks. Sight is, it is true, an invaluable blessing, and the physician and surgeon may sometimes essentially benefit it ; but many complaints of the eyes, and of depraved vision, are wholly incurable, and under such circumstances the best advice we

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can give is to do nothing except to keep the organ clean with lukewarm milk and water, or cold water alone, and to avoid exercising it in a strong light, particularly that of the sun, or of reading or writing by candle-light.

The *Eye-lids* are also sometimes affected with tumours of different kinds. One of these is called the *stye*, which frequently grows on the edge of the eye-lid, attended with heat, stiffness, and pain; it may sometimes be cured by discutient applications: but should these prove ineffectual, an emollient poultice will generally remove it. *Warts*, and such other tumours, require the same treatment as in other parts of the body.

The *Eye-lashes*, are sometimes inverted, so as to rub upon the eyes, and create much pain and inflammation. This complaint arises from a variety of causes, and the cure requires professional advice.

Weak eyes are sometimes merely the effect of living in confined situations, where the light is not sufficient to stimulate properly the visual organs. The remedy for this is, a gradual restoration to, and use of broad day-light; the necessity of which, for the general health, as well as that of the eye in particular, cannot be too often insisted upon and enforced. The eyes of children in particular ought to be much exposed to the stimulating influence of light, in order to strengthen and perfect their visual faculties.

Persons, however, who are troubled with weak eyes from other causes, will find an attention to food and drink important, nor is the state of the bowels to be disregarded; in some cases spectacles, although we are not advocates for their use, if it can be avoided, are absolutely necessary.

For *Short sight*, see SPECTACLES.

If any dirt or other matter should fall into the eye by accident, care should be taken not to irritate it by rubbing; if the matter be acrid or acid, washing the eye with cold water is the best remedy. If it be quick-lime or mortar, the eye should be smeared with olive oil. After the irritating matter is expelled,

if there be much inflammation, an application of goulard water may be necessary.

THE EYE of THE HORSE is liable to various diseases, amongst which the CATARACT is one of the principal; but which is, as mentioned under that article, from the peculiar structure of the horse's eye, incurable.

Young horses, when about five years old, are peculiarly liable to *Inflammation* of the eyes; such as are got by a blind stallion, or bred from a blind mare, are said to be most liable to this disease. On the first attack the eye-lids are partly closed, the tears are formed so abundantly as to flow over the cheek, and the haw often becomes more conspicuous, covering some part of the cornea. Sometimes the inflammation comes on more violently, extending to the cornea and the iris; the cornea even becoming of an obscure red colour, somewhat resembling blood. The disease sometimes attacks one eye, then the other; and sometimes a complete cataract is formed in one eye, and the other becomes strong and healthy. This complaint is a very obstinate one, and is very often incurable. The best remedies are, bleeding to the extent of four or five quarts; purging, and diuretics; fomentations of warm water, and exercise, so as to increase the perspiration. After the bleeding, diuretics are to be preferred; the following is perhaps the best: Take of powdered resin, and nitre, of each half an ounce; mix them, and let them be given, at first twice a day, and afterwards only once, or so as to make the horse stale more than usual, but not to injure the kidneys. Should the horse refuse to take the powder in his bran mash, (no corn should be allowed,) it may be formed into a ball, with a little flour and syrup. Three hours walking exercise will be found useful; but a cold easterly wind, dust, and rain, should be avoided. A light shade should also be adapted to the head, so as to keep off the direct rays of the sun. A seton immediately under the eye has often been of service. When the inflammation has abated, the

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following lotion may be substituted for the fomentation of warm water: Take of sulphate of zinc two drachms; of acetate of lead three drachms; of water one pint and a half; powder the two first ingredients, and put them into a bottle with the water; shake the bottle for a short time, and then filter through blotting paper. This lotion should be applied several times a day; and if the eye continue weak after the use of it, for four or five days, one ounce of brandy may be added to every four ounces of the lotion. In some cases a larger portion of brandy may be necessary. When the pupil is contracted, or very small, or if it appear irregular in its form, a small quantity of the extract of deadly night-shade may be introduced under the eye-lids; if this does not enlarge the pupil, in the course of three or four hours it should be repeated.

In *GUTTA SERENA*, or a loss of power in the retina or optic nerve, there is scarcely a chance of cure.

In *Blows*, or other external injuries of the eyes of horses, violent inflammation often takes place. Bleed freely, give a mild purgative, and foment the eye frequently with water at about blood heat, or with the lotion before described, made warm, and diluted with an equal quantity of water. After

the inflammation has subsided, the acedulated lotion and brandy, as mentioned above, may be applied.

In some opacities of the cornea, more powerful stimulants, such as common salt in fine powder, or even finely powdered glass mixed with honey, and placed under the eye-lids, have been found useful.

In conclusion, relative to the inflammation of the horse's eyes, we beg to observe, that it is much more easy to prevent the disease than to cure it; and that a proper system of stable management is the most likely to conduce to this end.

Diseases of the *EYES OF CATTLE*, are almost always caused by external injuries, and are to be treated in the manner which we have just described for those of the horse.

EYE-BRIGHT, or *Euphrasia*, in botany, a genus of plants containing eleven species, chiefly natives of the south of Europe; but one, the *officinalis*, indigenous to our own pastures. It is esteemed by the vulgar as a remedy for all diseases of the eyes, and was formerly an article in the materia medica of the dispensaries, but, as a medicine, is of no importance whatever. It is eaten by cows, goats, horses, and sheep.

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FACE, generally signifies the visage of any animal: it is more particularly applied to the human countenance.

The bones of the face are divided into those of the upper and under jaw. The upper jaw consists of thirteen bones; the under jaw of one bone. The muscles of the face are those of the eye-lids, eye-ball, nose, mouth, and lips.

The human face is called the image of the mind, being the seat of the prin-

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cipal organs of sense; and the place where the ideas and emotions are chiefly seen. Pride and disdain are shown in the eye-brows, modesty on the cheeks, anger in the eyes, &c. The face also shews the sex, age, temperament, health, disease, &c. The face is the principal index of the passions, habits, &c. See *PHYSIOGNOMY*.

Face-ach. See *TIC'DOLOREUX*.

FACIES HIPPOCRATICA, or

FALCON

HIPPOCRATIC COUNTEenance, is that particular disposition of the features so strikingly described by Hippocrates, which immediately precedes the stroke of death, and which occurs for the most part after the body has been afflicted with some disease.

FACULTY, in a general sense implies the power of doing any thing. The *faculties* mean the powers of the human mind. The body of regular medical practitioners, comprehending physicians, surgeons, and apothecaries, are commonly called the **FACULTY**.

FÆCES, the excrementitious matter of the intestines.

Fæcula. See **STARCH**.

FAGUS, in botany, a genus of trees consisting of five species, as follow: the *Castanea*, or chesnut, indigenous to our own woods;—the *Pumila*, dwarf chesnut, or *chinguapine*, a native of North America;—the *Sylvatica*, or beech, common to our woods;—the *Ferruginea*, a native of North America;—and the *Cochinchinensis*, a native of Cochinchina. See **CHESNUT** and **BEECH**.

Fahrenheit's Thermometer. See **THERMOMETER**.

Fainting. See **SWOONING**.

FAINTING of a **HORSE**. A horse may faint and fall down from loss of blood. The first thing to be done is to secure the bleeding vessel, and then he generally recovers in a short time; but if the fainting continue, a little warm strong beer may be given, or a small quantity of brandy in warm gruel.

FAIR, a public place where persons of every description assemble on some fixed day of the year to buy and sell commodities, cattle, horses, &c. and also to partake of various diversions, inspect exhibitions, &c.

Fairs are too often the resort of the idle and profligate, and are unquestionably injurious to the best interests of society, both pecuniary and moral. Their complete abolition is much to be desired.

FALCON, or *Falco*, an important genus of birds containing one hundred and thirty-six species, including the tribes of eagle, falcon, osprey some

birds improperly termed vultures, kite, kawk, buzzard, ring-tail, merlin, and hobby, scattered over the various parts of the globe: twenty-four are found in the interior, or on the coasts of our own country.

The bill of this genus is hooked; the base covered with a cere; the head covered with close-set feathers; the tongue bifid. They are for the most part a rapacious tribe, and feed on putrid carcases; yet seldom, and never except when pressed by hunger, attack living animals. They are bold, and fly with great speed when high in the air, but slowly in its lower regions; sense of smell and sight exquisite; not gregarious; generally build their nests in clefts of impending rocks: the bill more hooked than in the vulture tribe; legs and feet scaly; middle and outer toes connected.

The following are some of the chief:

The *Ossifragus*, or Osprey, inhabits Europe and North America; body ferruginous, tail feathers white on the inner side; size of a turkey; lives chiefly on fishes, upon which it darts down with surprising dexterity.

The *Leucocephalus*, or Bald eagle, body brown, head and tail white; inhabits the woods of Europe and America; three feet three inches long, feeds on hogs, lambs, and fishes; nest large; lays two eggs.

The *Chrysaetos*, or Golden eagle, body variegated brown and rusty; tail black, waved at the base with cinereous, white beneath; inhabits Europe and Siberia; flies to a vast height in serene weather, and descends against a storm; three feet long, weighs about twelve pounds;—two instances in Scotland of this bird having flown away with infants to its nest: in both cases the theft was discovered in time to extricate them without essential damage. Very long lived, occasionally upwards of a century; endures considerable abstinence, sometimes for more than twenty days.

The *Fulcus*, or Ring-tailed eagle, back brown, tail with a white band; another variety having a white tail with

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a brown tip; inhabits Europe, Asia, and America; builds on lofty rocks; trained by the Tartars to hunt hares, antelopes, and foxes; quill feathers, used to mount arrows.

The *Serpentarius*, or Serpent vulture; body black; hind head crested; tail feathers white at the tips; legs very long; inhabits the interior of Africa and the Philippine islands; three feet high; feeds on small animals.

The *Harpyja*, or Crested eagle; head crested with long feathers; body beneath variegated; size of a sheep; inhabits South America; erects the crest in the form of a coronet; can, it is said, cleave a man's skull at a stroke.

The *Barbatus*, or Bearded eagle; back brown; a black stripe above and beneath the eyes: two other varieties; inhabits the Alps;—the two last varieties Persia; four feet long; builds in rocks; preys on quadrupeds; will attack men when asleep; flies in flocks.

The *Gallicus*, or French eagle; body grey-brown; beneath, in the male, whitish with reddish brown spots; inhabits France; two feet long; feeds on rats, mice, and frogs; builds its nest mostly on the ground; lays three grey eggs.

The *Milvus*, or Kite; body ferruginous, head whitish, tail forked: three other varieties; inhabits Europe, Asia, and Africa; about two feet long; feeds on offal and poultry; flies placidly; foretels storms by its clamour; eggs three, whitish with yellowish spots; migrates into Europe the beginning of April.

The *Austriacus*, or Austrian kite; legs yellow; body above chesnut, beneath brick-dust colour, spotted with brown; tail forked; inhabits the woods of Austria; size of the last; feeds on birds and bats.

The *Haliaetos*, or Buld buzzard; feet blue; body brown above, white beneath; head white: three other varieties; inhabits the marshes of Europe, America, and Siberia; builds amongst reeds; about two feet long; feeds on ducks and fishes, which it catches by diving.

The *Antillarum*, or Mansfenny; body brown; belly white, crown black; inhabits the West India Islands; eighteen inches long; legs and claws large and strong.

The *Orientalis*, or Oriental hawk; head and body above dusky brown, beneath rusty brown, tail spotted with white; seventeen inches long; inhabits Japan.

The *Butes*, or Buzzard; legs yellow, body brown, belly pale with brown spots; twenty inches long; feeds on birds, insects, and small animals; varies in its colours; inhabits our own country and Europe at large.

The *Æruginosus*, or Moor buzzard, body grey; crown, chin, arm-pits, and legs yellow; twenty-one inches long; builds in marshes; lives on fishes, aquatic birds, and rabbits; varies in colour; inhabits England and Europe generally.

The *Palumbarius*, or Goshawk; legs yellow, body brown, tail feathers with pale bands; twenty-two inches long; devours poultry; inhabits England, Europe, and North America; formerly much used in falconry.

The *Communis*, Common falcon, Yearly falcon, or Aged falcon; body brown, the feathers edged with rusty; tail with darker transverse bands; bill bluish-ash; legs yellow; ten other varieties, one entirely white, with scarcely visible yellow spots; another brownish black; another spotted with black and red. Inhabits Europe and North America; some of the varieties China, Hudson's Bay, and India. Larger than the goshawk; feeds on partridges.

The *Gyrfulco*, or Brown gyrfalcon, legs yellow; body brown with cinereous bands beneath; sides of the tail white; preys on herons, cranes, and pigeons; inhabits Europe.

The *Lannarius*, or Lanner; legs and bill blue; body beneath with black longitudinal spots; two other varieties; size of a buzzard; migrates; builds in low trees; inhabits England, Sweden, and other parts of Europe and Tartary; much esteemed in falconry.

The *Cyaneas*, or Hen harrier; body

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hoary-blue ; a white arch over the eyes surrounding the chin ; seventeen inches long ; inhabits England, and other parts of Europe and Africa.

The *Tinnunculus*, or Restril ; legs yellow ; back purplish red with black spots ; breast with brown streaks ; tail rounded : two other varieties ; inhabits England, other parts of Europe, and Siberia ; migrates to the north early in the spring ; preys on mice, small birds, &c. ; formerly trained for catching game.

The *Nisus*, or Sparrow hawk ; legs yellow ; belly white waved with grey ; tail with blackish bands ; two other varieties,—one black spotted with white, the other, body entirely white. Inhabits England and Europe generally, Africa and Madeira ; male twelve inches, the female fifteen inches long ; very bold, preys on poultry, partridges, pigeons, and small birds ; is taught to catch larks.

The *Vespertinus*, or Ingrian falcon ; legs and eyelids yellow ; vent and thighs rusty ; inhabits Ingria, Russia, and Siberia ; builds on trees, or takes possession of the magpie's nest ; preys on quails, and goes abroad chiefly in the evening or night ; size of a pigeon.

The *Subbuteo*, or Hobby ; legs yellow ; back brown, nape white, belly palish, with oblong brown spots ; one other variety ; twelve inches long ; preys on larks ; inhabits England, other parts of Europe and Siberia.

The *Esolon*, or Merlin ; legs yellow ; body above bluish ash, with rusty spots and stripes ; beneath, yellowish white with oblong spots ; inhabits Europe ; migrates southerly on the approach of winter ; often seen in England ; twelve inches long : three other varieties inhabiting the West India Islands, and New York.

The *Pumilius*, or Tiny falcon ; legs yellow ; body brownish ash, beneath whitish with blackish bars ; the smallest of the whole genus, being hardly six inches long ; inhabits Cayenne.

The common, or yearly falcon, is the bird which was most usually employed in ancient times in the sport or science of falconry. We have lately heard of

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some attempts to revive this silly amusement in this country ; but we hope the good sense of the age is superior to such childish pursuits.

Falling Sickness. See EPILEPSY.

Falling Star. See METEOR.

FALLING DOWN OF THE ANUS, or rectum, is sometimes occasioned by a weakness of the parts, but more commonly by violent exertion, or by straining in going to stool. It frequently happens to children who cry much, and to females who have borne many children. The reduction should be effected as soon as possible : the tumour should be supported with the palm of one hand, while with the fingers of the other the part of the gut last protruded must be returned. If the rectum be swelled or inflamed, foment with warm milk, or with decoction of poppies ; see POPPIES ; or apply a bread and milk poultice. The patient during the reduction is to be kept in a reclined posture. As soon as the bowel is returned, a proper bandage or truss should be applied. Costiveness should also be avoided.

FALLING DOWN OF THE UTRERUS, is occasioned by debility, or by excessive straining in the time of parturition. It seldom occurs before child-bearing, and is commonly met with in those who are somewhat advanced in life. The parts protruding should be reduced by gentle pressure, while the patient is placed in a horizontal position. After they have been replaced, and the parts have recovered a little strength by rest, &c., the following injection may be used : take of pomegranate peel and peruvian bark, of each bruised one ounce ; boil them in one quart of water to a pint ; strain and add of port wine half a pint. The same may likewise be applied by way of fomentation. If this injection and fomentation be not sufficient to retain the parts in their natural situation, pessaries must be worn ; they ought to be made of cork, or other light materials finely polished, and somewhat compressible ; they are sometimes made of ivory, sponge, &c. ; but those made of elastic gum, or Indian rubber, are esteemed

the best. This, or whatever else may be used for the purpose, must be retained by a proper bandage, and worn till, with the assistance of strengthening medicines and diet, the parts recover strength to retain their natural situation.

FALLING DOWN of the Calf-Bed, or inversion of the womb of the cow, occurs sometimes after the extraction of the calf. It arises either from the force used in the delivery of the animal, or from the cleansing remaining in the womb after delivery, which generally causes the cow to lie down and strain. This accident is more likely to happen when the floor of the cow-house is lower behind than before; when this is the case, the animal should be removed to another place, or the floor so raised that the cow's hind parts may be rather higher than the fore parts. After removing the dust, or bits of straw, which have accidentally stuck to the protruded part, if the placenta or cleansing still adhere, it must be gently separated before any attempt is made to replace the inverted organ. A linen cloth must be put under the womb, being held by two assistants, and the cow should be made to rise, a standing posture being the most favourable to the reduction. The mouth of the womb must then be grasped with both hands, and gently pushed forward into the body of the cow; one hand is then to be withdrawn, whilst the other remains to prevent the part from falling down again. This process is to be repeated till the whole of the calf-bed is put back. In grasping these different portions of the womb, care must be taken that it is done by the upper surface, or that lying next to the back of the cow. During the operation the womb must be supported, and on no account be suffered to hang down. If the cow cannot be made to stand, the hinder parts must be raised by trusses of straw. When the operation is finished, the hand is to be thrust gently up to the bottom of the womb, and kept there until the parts have regained their natural situation. If the operation has been properly conducted, no after treatment is in general

necessary. The only medicine necessary is a laxative. When the straining is considerable, so as to render it impossible to replace the womb, an opiate clyster may be thrown up, and if this fail, from half an ounce to an ounce of tincture of opium may be given as a drench.

FALLING DOWN of the FUNDAMENT in animals, is sometimes occasioned by long-continued looseness, by too strong physic, or by over-exertion. After bathing the part with a little tincture of opium and warm water, it should be replaced with the hand; immediately after which the tail should be kept close to the fundament for a short time. The bowels should be kept rather open with bran marshes or castor oil; and sometimes when the irritation of the gut is great, so that it cannot be kept up, an opiate clyster will be necessary, and as soon as the pipe is withdrawn, considerable pressure should be made on the fundament.

FALLOW, arable land lying at rest, or unoccupied, except by repeated ploughings. Over the greater part of Europe it was long considered an advantageous practice, occasionally to dedicate an entire season to the cultivation of arable land, without raising from it any crop. It is now, however, admitted, that light soils, where the culture of turnips is eligible, need not be kept in an unproductive state; and that, on strong lands, under a judicious system, summer fallows are not required more than once in the course of a rotation. It is notwithstanding also generally admitted, that in some climates, Scotland for instance, it is the interest of the farmer, whose lands are cold, strong, clayey, adhesive, and wet-bottomed, periodically to fallow them. And although the climate of England is certainly superior to that of Scotland, yet many respectable authorities still consider an occasional fallow necessary. Mr. Marshall informs us, in his agricultural survey of Gloucestershire,—that if land be in a state of foulness with root-weeds, a year's fallow is the shortest, the most effectual, and the cheapest way of

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cleansing it; but he adds, that when land is once thoroughly cleansed, it may, by fallow crops and due attention, be kept in a state of tilth and cleanness for ten, fifteen, or perhaps twenty years. It appears, therefore, that summer fallows are by no means so commonly necessary for arable lands as they have been formerly esteemed: for, except in clearing the lands from root-weeds, the other purposes of fallows may be answered by a rotation of crops. See **ROTATION OF CROPS**, and **HUSBANDRY**.

FALLOW-DEER, the deer bred in parks for the production of venison, as well as for ornament. The male is called a buck, the female a doe, and the offspring of both a fawn. See **DEER**.

FALSE QUARTER, a fissure or cleft in the hoof of the horse, generally of the inner quarter. It may be caused by wounds in the coronet, pricks in shoeing, and sand cracks. The cure consists in blistering the affected part of the coronet and a little above it, and taking off the pressure of the shoe from the diseased quarter of the hoof, as mentioned under **CORNS**.

Family Mill. See **MILL**.

Fanners. See **WINNOWER**.

Fansel-nut. See **CABBAGE-TREE**.

FARCY, an infectious disease, said to be peculiar to the horse, the ass, and the mule. It appears in small tumors or buds, about the legs, inside of the thigh, neck, face, and other parts; they are at first hard, but gradually become softer, and at length suppurate, burst, and become a foul ulcer. It sometimes spreads under the skin, forming sinuses or pipes; these should be always laid open through their whole extent, except when they occur about the joints or tendons. It sometimes takes a more malignant form; the legs swell prodigiously, as well as other parts, attended with considerable fever, and the horse soon dies; this state of the disease is, however, not common. Farcy frequently terminates in the glanders: it is not often cured. When it attacks a horse that is in good condition, it may be cured; but topical applications alone ought

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never to be depended on. The following ball should be given morning and evening, provided it does not occasion sickness, or uneasiness of the bowels: Take of sulphate of copper one drachm; white arsenic and corrosive sublimate, of each ten grains; powdered cascarilla bark two drachms; oil of carraway seeds twenty drops; linseed-meal half an ounce; Venice turpentine enough to form a ball. When the buds become soft, and appear to contain matter, they should be completely laid open, and dressed once or twice with the following solution, after which the sore generally heals of itself. Take of corrosive sublimate one drachm; muriatic acid three drachms; spirit of wine, one ounce; water, half an ounce. Dissolve the sublimate in the acid, then add the water, and lastly the spirit. Instead of this, almost any caustic will answer the purpose. The horse's diet should be nutritious, but rather of an opening nature.

As this is an infectious disease care should be taken that no healthy horse comes in contact, or be near one, either affected with the farcy or glanders: for the matter of both these diseases will produce farcy if applied to the horse in almost any way.

There is also a disease of horses called the *Watery Farcy*, but it is quite a different one from that of which we are now treating. See **DROPSY** and **GLANDERS**.

Fardel Bound. See **COSTIVENESS** of **CATTLE**.

FARINA, meal or flour: the pulverulent and glutinous part of wheat and other seeds; it consists of gluten, starch, mucilage, and sugar. See **FLOUR**, **WHEAT**, &c.

FARM, a small district of land, on which is most commonly a house, with other conveniences for the purposes of cultivation.

The uniting of small farms into large ones, has been long complained of, and for the mass of the population there can be no question of its injurious tendency; but this is only a part of that system, which has been gradually growing up in this country, and which, we are sorry

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to observe, neither the habits and dispositions of men, nor our statesmen, seem disposed to counteract. Where wealth is very unequally diffused, such consequences as the conversion of many small farms into one large one, and other overbearing monopolies, will inevitably be found. On this subject, although we are not without hope, we are obliged to confess that our fears are neither few nor unimportant. See **HUSBANDRY**.

FARM-HOUSE, a house attached to a farm for the purposes of farming.

In the erection of farm-houses care should be taken that pure spring water may be obtained in abundance, as without this necessary fluid, dairy farming, in particular, cannot be carried on at all; a running stream is also advantageous.

FARRIERY, or as it is now called, **VETERINARY SCIENCE**, is the knowledge of curing the diseases of not only horses, but cattle of all kinds.

This art was, till the year 1792, confined to a class of men utterly ignorant of the anatomy of the horse, and other animals, and also of the general principles of the art of healing. But since the establishment of the **VETERINARY COLLEGE**, at St. Pancras, near London, this art has undergone considerable improvement. Yet, although great numbers of *Veterinary Surgeons* are spread abroad, in different parts of the country, the number of ignorant pretenders compared with the truly scientific, is lamentably great. Notwithstanding farriery has certainly improved during the last thirty years, in this country, particularly relative to the *Horse*, we fear obstacles, apparently insuperable, yet remain to be overcome, before our knowledge of the treatment of the diseases of other cattle can very much improve. The horse is not only a very useful, but often a very valuable animal, and from the high price which is sometimes given for it, it is the interest of persons devoted to its rearing and keeping, to supply the stimulus of gain in sufficient quantity to make it an object, with a scientific person, to study its diseases; but not so with other cat-

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tle: for it very often happens that the *cheapest* thing which a farmer can do when an animal is attacked with disease, is to knock it on the head, or to employ only those ignorant pretenders who too often do, perhaps, more harm than good. Till, therefore, it becomes worth the while of the scientific to attend to the diseases of cattle, and even of horses in the country, this art, we fear, is destined to make a very slow progress. We shall do the most we can for the intelligent farmer in this work; and we do not doubt, that with due attention, the farmer himself will manage the diseases of his cattle much better than most of those persons whom, in the country, he can generally have an opportunity of consulting.

FARTHING, a copper coin, in value the fourth of a penny.

FASCINATION, unseen or inexplicable influence. Not only man, but other animals, it is said, are liable to the powers of fascination. In man, the greater part of the superstitious which possess the mind, arises from the mischievous influence of fascination, against which we cannot be too much upon our guard. The quackeries of animal magnetism appear to depend on the power of fascination. Of all animals the serpent tribe are said to possess the power of fascination in the highest degree; but till facts are better ascertained, our judgment upon this subject ought to be cautiously withheld. The fascinations amongst mankind originate, for the most part, in *mystery*: no person can be fascinated unless his mind become a willing dupe.

FASHION, the present mode in which any thing is done, said, or worn. Fashion in dress and occupations too often usurps the place of reason: many things are done because it is the fashion, which are not only useless and ridiculous, but absolutely absurd. Fashion may be made the means of introducing the best as well as the worst habits into society. If it once became the fashion to consult the general, as much as it now is the individual happiness of man, how much misery would be banished

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from the earth—how much would the sum of earthly happiness be increased ! Fashion is twin sister to ambition ; both may be used to the great benefit of mankind.

FASTING, an abstinence from food. Although occasional fasting is of service in some diseases, as mentioned under **ABSTINENCE**, yet long fasting, or the refraining from particular kinds of food, adopted by some religious persons at certain seasons, is not to be commended ; nor is the total abstinence from animal food a proceeding which we can approve. Some persons, particularly the sedentary, may bear long intervals of fasting with impunity ; but the surest way to obtain good health is to eat moderately, and never, during the day, to pass more than three or four hours between any meal.

FAT, a concrete oily matter, contained in the cellular membrane of animals, of a white or yellowish colour : it is of various degrees of consistency, as seen in *tallow*, *lard*, and *oil* ; when pure it has little taste or smell ; but acquires both by keeping, and becomes rancid and slightly sour.

The fats, when decomposed by a red heat, afford abundance of olefiant gas, (See **CARBURETTED HYDROGEN**) and a small portion of charcoal : products analogous to those of vegetable oil. They also produce soaps, by combination with alkalies.

Experiments have shown that fat, as well as oil, is composed of two substances, to which the names *stearine*, and *elaine* have been given ; the former solid, the latter liquid at common temperatures. Butter made in summer has been found to contain, in one hundred parts, 60 of *elaine*, and 40 of *stearine* ; hogs-lard, of *elaine* 62, and *stearine* 38 ; Mutton-marrow, 74 and 26 ; beef-marrow 24 and 76 ; goose-fat, 68 and 32 ; and olive-oil 72 and 28. But it appears that both the component parts of fats and oils are convertible into soap.

The fats, and most expressed oils, differ very little in their medicinal effects : the fats, in particular, are gene-

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rally considered so very similar as to be no longer deserving of distinction.

Fat, as food, suits only the more active and robust ; the sedentary, valetudinarian, and dyspeptic, must avoid it. See **ALIMENT**.

Fitness. See **CORPULENCY**.

FATE, an inevitable necessity, depending upon a cause over which we have no control. The opinion entertained by some persons, that *do what we will*, our destiny is fixed, and that no efforts of the individual can alter it, is not only injurious, but is also founded in error. We may readily be convinced, by looking around us, that no effect takes place without a cause : hence if we desire certain effects to take place, we must adopt the means : that is, introduce the causes which are calculated to produce such effects. Thus if a person have taken poison, means must be taken to eject the poison from the stomach, or to destroy its effects, or he will inevitably die ; or if a child have fallen into a river, unless he be taken out, he will unquestionably be drowned. The same arguments apply to moral processes : no person can become moral, unless suitable means be adopted for the purpose. To expect moral conduct to arise without a cause, (i. e.) without the introduction of means calculated to produce it, is absurd.

Father. See **PARENT**.

Father-lasher. See **BULL-HEAD**.

FATHER-LONG-LEGS, or *Tipula Pectinicornis*, one of the one hundred and thirty-five species of insects of the genus **TIPULA**, or Crane-fly, which are scattered over the globe. By far the greater part are indigenous to Europe : forty are common to our own country. Most of this genus have a resemblance to the gnat, and are often mistaken for it, but they are far more inoffensive. They are sometimes a beautiful green, sometimes a coal-black. The *Pectinicornis*, or Father-long-legs, the *Rivosa*, the *Tritici*, found in the ears of wheat, to which it is very injurious, the *Berberini*, or Barbary Crane-fly, and the *Moschifera*, or Musk

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Crane-fly, used in Chili as a perfume, are the chief.

FATHOM, a measure of length containing six feet : the term is principally used by seamen.

Fattening of Cattle. See **HUSBANDRY**, **Ox**, **SHEEP**.

FAUCES, in anatomy, the cavity behind the tongue, palatine arch, uvula, and tonsils, from which the pharynx and larynx proceed.

FAWN, the young of the buck and doe, so called during its first year.

FEAR, a painful emotion of the mind, arising from any kind of real or supposed evil, whether immediate or prospective. The evil may consist in our being deprived of what we at present enjoy, in being disappointed in what we expect, or in the infliction of a positive misery.

The passion of fear, pervades not only man, but almost all animated nature, and is one of the best safeguards of the individual. Anxiety, terror, horror, awe, cowardice, and timidity, are various modifications of this feeling. That fear which prompts us to take proper care of ourselves, or of our fellow-creatures, is good ; but that which unmans the mind, and renders us incapable of action in critical conjunctures, should be as much as possible guarded against, and repressed. **COURAGE** and **PRESENCE OF MIND** are the best remedies for fear. See those articles ; see also **ACCIDENTS**.

FEATHER, a general name for the covering of birds.

The feathers chiefly used in this country for beds, are those of geese, which are sometimes plucked four or five times a year, and in cold seasons many of them die by this barbarous custom. The feathers brought from Somersetshire are esteemed the best ; those from Ireland the worst.

Eider-down is brought from Denmark ; the down of the swan is brought from Dantzic ; Hudson's-bay also furnishes very fine feathers ; the feathers of cocks, hens, ducks, and turkeys, are also sold in large quantities by the London poulterers ; duck's feathers are

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inferior to the goose, and turkeys, are the worst of all.

A good method of curing feathers is, to lay them in a room exposed to the air and sun ; and when dried, to put them in bags, and beat them well with poles to get off the dirt ; but placing them in bags in an oven, moderately heated, or after the bread has been withdrawn, is in Somersetshire a common, and, we believe, a very useful practice. For our opinion of Feather-beds, see **BEDS**.

Feather, Prince's. See **PRINCE'S FEATHER**.

FEBRIFUGE, a medicine having the power to cure fever.

FEELING, one of the five external senses, by which we obtain the ideas of feeling solid, hard, soft, rough, hot, cold, wet, dry, and other tangible qualities. Feeling is the coarsest, but the surest of all the senses, as well as the most universal, being the basis of all other sensations.

Feeling also implies that state of the mind in which great sensibility is felt, accompanied with a desire and exertion to relieve the wants, and soothe the anxieties of our fellow-creatures : a state of all others in which the truly virtuous and benevolent delight in and indulge.

FELDSPAR, or *Feldspatum*, in mineralogy, a genus of the class earths, and a compound body, of which silica and alumina are predominant ingredients ; it generally contains a little lime and potassa, and is often coloured by minute portions of oxide of iron. Sometimes it is found crystallized, in four or six-sided prisms ; its usual colours are red, white, and grey. It is softer than quartz, but harder than glass, and is fusible by the blow-pipe. Six varieties have been observed of this substance, viz. : *cubic feldspar* of a reddish brown, and of a glossy lustre, specific gravity 2,081 ; *common feldspar*, of a glossy lustre : four varieties ; found every where in primitive mountains, forming a part of granite, porphyry, and gneiss-rocks ; strikes fire with steel ; specific gravity from 2,072, to 2,594 ; *Labradore spar*, or *Labradore stone*, of a light

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or dark grey colour, and of a vivacious lustre: found on the coast of Labrador, various parts of America and Europe; receives a high polish; specific gravity 2,6700, to 2,6925; *Moonstone*, or pure feldspar, found in Ceylon, and various parts of Europe; is pellucid, white, and of a high lustre; specific gravity 2,559; *Fibrous feldspar*, found in Bohemia, colour, usually of a shining brown; *Cut's-eye*, found in Ceylon and Siberia, colour grey, tinged with green, yellow, or white; strikes fire with steel; specific gravity 2,625 to 2,660.

Feldspar is a very important ingredient in many kinds of pottery: the substance used by the Chinese under the name of *petuntz*, is probably of a similar nature. The decomposing feldspar of Cornwall, is abundantly employed in the English porcelain manufactories, and as it contains no iron, it retains its perfect whiteness. Some of the varieties of feldspar are employed as ornamental jewellery. Feldspar not only forms a constituent of granite, but is also a component part of several other rocks.

FELLING OF TIMBER, has been generally adopted in the spring, but recent experiments seem to prove that the best period for cutting down trees, in order to make the timber most valuable, is in the depth of the winter, at or about Christmas. See **BARKING OF TREES**.

FELO DE SE, or a felon of himself, is a person who, being of a sound mind, and of the age of discretion, voluntarily kills himself. By the English law, a person guilty of *felo de se*, forfeits all his goods and chattels, both real and personal; but his lands of inheritance are not forfeited; nor is such a person's wife barred of dower, nor his blood corrupted. Such forfeiture cannot take place till after an inquisition and verdict of a coroner's jury, unless under peculiar circumstances. The body of a *felo de se* is also to be buried in the highway, and a stake driven through it. We should hope that the last revolting process, as well as the forfei-

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ture of goods, which cannot reach or affect the person who has committed the suicide, will not long remain a blot on our statute books. See **SUICIDE**.

FELONY, a crime to which, generally, forfeiture of lands, or goods and chattels, is attached. In all felonies which are punishable with death, the offender forfeits all his lands in fee-simple, and also his goods and chattels; in such as are not so punishable, his goods and chattels only. If a statute make any offence felony, the law implies that it shall be punished with death; viz. by hanging, as well as by forfeiture, unless the offender prays the benefit of clergy, which all felons are entitled once to have, unless the same is taken away by an express statute. The term felony includes by far the greater part of the criminal offences committed in this country, and those who commit them are termed felons. See **CLERGY, BENEFIT OF**.

FEMALE, one of the sex which brings young. A *female plant*, is a plant which has female flowers only; a *female flower*, a flower which has pistils, or stigmas, without stamens, or at least without anthers.

FEMUR, in anatomy, the thigh-bone.

FEN, a general name for boggy or marshy land, subject to be overflowed with water.

The fens of Cambridgeshire, Lincolnshire, and several other districts of England, consist of peat and sediment. They are pared off and burnt for coals, to be fed off by sheep. After two crops of grain, they are sown with grass-seed, (two bushels of rye-grass, and eight or ten pounds of white clover to an acre) and remain in grass for five, six, or seven years: the longer the better. In the *peaty* fens, beans and turnips have been cultivated, but do not answer; nor can such land be fallowed, for it does not bear much stirring. Potatoes and carrots, as inter-vening crops, answer well.

The great object, however, is, to adapt fenny or peaty land to *hay-crops*. It has been lately ascertained

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that, by suffering the second crop of grass, which might often be with difficulty converted into hay, to rot upon the ground, an immense produce of hay is ensured for the succeeding year, and the fen land may thus become a perpetual hay-meadow. See **BOG**, and **DRAINING**.

FENCE, in rural economy, a hedge, wall, ditch, bank, or other inclosure, made round gardens, woods, fields, &c.

The fences employed for parks, and sometimes for gardens, are generally made of paling, which, if of winter-fallen oak, will continue sound for many years. The paling of parks should be 6½ feet high, at least.

The best kinds of plants for fences are the following: **BLACK-THORN**; — **FURZE**; — **HOLLY**; — the **COMMON BRAMBLE**; — **ALDER**; — **ELDER**; and **WHITE-THORN**, which is the best of all, because it will grow on almost any soil, unless a very wet one. See **HEDGES**.

In lowland districts, ditches are very often the only fences; but there is not much wisdom in such separation of land. As they are often filled with water, cattle frequently slip in and are drowned: an embankment with a hedge on it, would be much better, not only for safety to the cattle, but for *shelter*, a consideration, in rural economy, not sufficiently attended to.

FENDER, an iron or brass guard, placed before a fire, in order to prevent coals or sparks from falling on the floor of the room. We mention this article principally to recommend, in addition to the use of our common fenders, that of the *moveable wire-guard*, which may be fixed on the grate itself at pleasure, and which not only prevents coals and sparks of fire from flying out in the room, but also effectually guards young children, and the clothes of ladies, from being injured by this dangerous element. See **FIRE**.

Fennel, the Sweet or Common. See **DILL**.

FENUGREEK, or *Trigonella foenum-græcum*, a plant, native of Montpellier. The seeds were formerly used in poultices, but are now superseded by

FER

linseed. Farriers still prescribe them occasionally.

FERMENTATION, implies the spontaneous changes which certain vegetable juices, or solutions, undergo when placed in certain circumstances, and which terminate either in the production of an intoxicating liquor, or in vinegar: the first process is called the *vinous*, and the latter the *acetous* fermentation. There is also another species of fermentation termed *putrid*. See **PUTREFACTION**.

In every process of fermentation, a certain degree of heat is absolutely necessary: the vinous process will, in some of our native juices, proceed when a few degrees above the freezing point, but it proceeds best, when the temperature of the air is between 50° and 70; if it be much higher, there is danger of exciting the acetous fermentation, which of course, in making vinous liquors, we must be careful to avoid.

The principal substance concerned in the vinous fermentation is sugar; and no vegetable juice can be made to undergo the process which does not contain it in a very sensible quantity. In the production of beer, the sugar is derived from the malt; in that of wine, from the juice of the grape. The expressed juices of the apple and pear, in their conversion into an intoxicating liquor, always undergo the vinous fermentation. See **BREWING**, **CIDER**, and **WINE**.

In the fermenting vessel, the different substances, held in solution in the liquor, begin to act upon each other; an intestine motion ensues, the temperature of the liquor increases, and carbonic acid escapes in large quantities; at length this evolution of gas ceases, the liquor becomes quiet and clear, and has lost much of its sweetness, it is also diminished in specific gravity, has acquired a new flavour, and becomes intoxicating; the cause of which quality arises chiefly, if not entirely, from the alcohol, or spirit of wine, which is formed from the sugar contained in the liquor previous to its fermentation.

The distillers prepare a liquor called *wash*, for the express purpose of procuring from it ardent spirits; instead of brewing this from pure malt, they chiefly employ raw grain, mixed with a small quantity only of malted grain; the water employed in the mash-tun is of a lower temperature than that requisite in brewing, and the mashing longer continued, by which it is probable that a part of the starch of the grain is converted into saccharine matter. The wort is afterwards fermented with yeast. Indeed, without an addition of yeast, or gluten, which yeast appears principally to be, no vinous fermentation can be effectually carried on with wort obtained from grain of any kind. But the juices of the grape, apple, pear, and others, ferment spontaneously; and if they contain a sufficient quantity of sugar, they yield a strong and intoxicating liquor. The cause, amongst others, of this spontaneous fermentation, arises, we believe, from these juices containing a sufficient quantity of gluten to forward the fermenting process: whereas gluten, in the form of yeast, must be added to worts, or no proper vinous fermentation is produced.

If the sugar be in small quantity, either in worts or in the natural juices, the vinous fermentation soon ceases, and the liquor being exposed to atmospheric air, undergoes another fermentation: a quantity of oxygen is absorbed, and the liquor is converted into vinegar: this is called the *acetous* fermentation. See VINEGAR.

Besides the active vinous fermentation which we have just been considering, there is another, which gradually takes place afterwards in the fermented liquor. If wines, cider, or malt-liquors, be examined immediately after the active fermentation has subsided, provided they are strong bodied, more or less sweetness will be still found in them. This sweetness gradually goes off by age: that is, generally, the remaining sugar is converted, without any disturbance in the liquor, into alcohol, and till such complete conversion has taken place, the liquor has not arrived

at its full strength. The time and the processes necessary to complete this subsidiary fermentation are various. In cider, our other native juices, and beer, provided they are not kept in a very cool place, and are not extraordinarily strong, the spring months generally complete it: some, but they are rarely met with, require the whole summer, or even years. Wines, those of Madeira in particular, require more heat and longer time: a voyage to the West Indies improves them; but one to the East, makes them still better.

When any of the above-mentioned fermented liquors are distilled they afford a *spirituous liquor*; that from wine is termed *brandy*; from the fermented juice of the sugar-cane we obtain *rum*; from wash *malt spirit*; and this spirit being impregnated with juniper berries, angelica root, or oil of turpentine, becomes the different *gins* obtained in the shops: these liquors, by re-distillation with potash, to arrest the aqueous and oleous matters which they contain, become spirit of wine, ardent spirit, or alcohol. See ALCOHOL and CARBONIC ACID.

FERMENTED LIQUORS, are those obtained by the process of fermentation, such as beer, ale, porter, cider, wines, &c.

Fermented liquors, for those who take much muscular exercise, appear to be well suited; but the sedentary and valetudinarian will find malt-liquors, and *home-made* wines, as they are called, frequently injurious. The foreign wine to be preferred, is Madeira or port: the last, from its containing a considerable quantity of tannin, is, we think, by far the best.

For the treatment of persons apparently dead from the inhalation of the gas arising from fermented liquors, see CHARCOAL.

FERN, the FEMALE, or *Pteris aquilina*, an indigenous well-known plant, growing on heaths, in woods, and dry barren places.

The stalks of this plant may be, and are occasionally, used as a substitute for straw, in the covering of houses.

It is, however, a very troublesome weed, and not easily extirpated; but when it grows to a large size, it is a sign of the goodness of the soil. June or July, are the best seasons for destroying it. It sometimes appears after a rotation of seven years, including a fallow, and sometimes requires another rotation and cutting repeated, before its final disappearance can be effected. Lime, in its caustic state, is peculiarly hostile to it. But frequent cultivation, and green crops assisted by the hoe, promise the most effectual extirpation, unless a woman be employed to cut off the fern, when young, just below the surface of the ground, and another woman with a bucket of old salt, apply a pinch of it to the severed and bleeding root: the acidity of the salt in this way destroys the weed.

FERN, the **MALE**, or *Aspidium filix mas*, a common indigenous perennial plant, growing in woody places, and flowering in June and July.

The root is astringent, and has been celebrated, both by the ancients and moderns, as a powerful anthelmintic.

The dried root has been ordered for the tape-worm thus: From one to three drachms of the powdered root mixed in a large cup-full of water, are to be taken in the morning, while the patient is in bed; two hours afterwards, a strong cathartic of calomel, and gamboge, proportioned to the age and strength of the patient, is to be given; and if necessary, the further operation must be promoted by a dose of purging-salts; nothing but broth being taken till the worm comes away. If this does not happen on the same day, the process is advised to be repeated.

Notwithstanding the celebrity of this remedy, more efficacy may be ascribed to the cathartic than to the fern-root; and from the more certain remedy of oil of turpentine in expelling the tape-worm, this medicine, although still retained in the dispensatories, may be dispensed with.

Ferret. See **OTTER**.

FESCUE-GRASS, or *Festuca*, a genus of plants, consisting of twenty-

seven species: twelve are common to the pastures, woods, or old walls, of our own country. The following are the most important as fodder for cattle: the *Pratensis*, or meadow fescue-grass; the *Ovina*, or sheep's fescue-grass, and the *Duriuscula*, or hard fescue-grass.

The meadow fescue is said to be superior to Ray-grass, being larger and more productive in foliage. It is strictly perennial and hardy, thriving well not only in wet, but in dry grounds; growing in all situations, from the sand-pits at Charlton, to the osier-grounds of Battersea.

FET-LOCK, the lock or tuft of hair that grows behind the pastern-joint of a horse, whence the joint itself is called the fetlock-joint, as well as the pastern-joint. See **GREASE**.

FETOR, a strong and offensive smell.

FETUS, in anatomy, the child enclosed in the uterus of its mother, from the fifth month after pregnancy, until the time of its birth: previous to which it is called *embryo*. The term fetus is, however, in common language, applied to it from the earliest period of impregnation.

FEVER, or *Febris*, a generic term, implying a variety of very different diseases. Fevers generally begin with shivering, succeeded by an increase of heat, dry skin, thirst, and a quick and sometimes irregular pulse; in some fevers, considerable perspiration follows these symptoms. In fevers, several of the animal functions are often impaired, and the quantity of muscular strength, indicated by weariness and inaptitude for motion, is remarkably diminished. The following are the chief:

The *Continua*, or *Continued fever*, has no intermission, but an increase of the symptoms come on twice in one day. The species of continued fever are three: the **SYNOCHA**, or inflammatory fever, known by increased heat; pulse frequent, strong, and hard; urine high-coloured; senses not much impaired. The **TYPHUS**, or putrescent fever, which in some of its varieties is contagious, is characterized by moderate heat; quick, weak, and small

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pulse; senses much impaired, and great prostration of strength. Three varieties of typhus have been particularly observed: *Typhus mitior*, or the NERVOUS FEVER; *Typhus gravior*, or the PUTRID FEVER; and *Typhus icteroides*, or YELLOW FEVER. The SYNCHUS, or mixed fever, is a compound of the two preceding, commencing like the first, and terminating with the symptoms of the second.

The *Erysipelatosa*, Erysipelatous fever, or St. Anthony's fire.

The *Hectica*, or Hectic fever.

The *Intermittens*, Intermittent fever, or ague.

For the description and mode of treatment of the various kinds of typhus, see TYPHUS; of St. Anthony's fire, see ERYSIPELAS; of hectic-fever, see HECTIC; of intermittent-fever, see AGUE; of synchus, see SYNCHUS.

The *Synocha*, or INFLAMMATORY FEVER, of which only we shall here treat, begins with cold shivering, succeeded by great heat, redness and dryness of the skin. The face, especially, is very red, and the thirst intense. The pulse is full, quick, and frequent: the head is either pained or heavy; the respiration is difficult, and the belly costive. The patient does not sleep at all, or is disturbed with dreams. A moist sweat breaks out all over the skin. The judgment is sometimes a little disturbed. Persons most subject to this complaint, are either naturally robust, or those who are exposed to causes which tend to produce an increased circulation of the blood, such as hard labour, high living, &c.

In the cure of this complaint, impressions on the external senses, such as light and heat, should be carefully avoided; so also should all motions of the body, and that posture only chosen which employs the fewest muscles, and keeps none in a state of contraction.

The exercise of the mind is also to be avoided, except in delirium, when the presence of accustomed objects may prevent the continuance of this symptom.

The aliment should be of the weakest

kind, such as decoctions of rice, barley, oats, &c., indeed, a total abstinence from food for some time, may be of service; but such abstinence should not be continued too long. Animal food in every shape should be avoided, and every kind of spiritous and fermented liquors.

The thirst will be best quenched with water, toast and water, lemonade, the juice of oranges, &c.

The bowels should be kept open by saline evacuants, such as Epsom salts; and the heat may be moderated by an admission of cool air.

Bleeding is also, in this disease, very often necessary; indeed, bleeding and purging in the commencement of it, with an abstinence from food, promise most effectually to cut short the disorder. When sweating can be excited by the use of warm diluent liquids, such as thin gruel, tea, &c., it is desirable to be introduced; but stimulating medicines taken to excite it, should in general be avoided; nor should sweating be kept up if it does not relieve the patient.

If there be sickness and load at the stomach, with nausea and inclination to vomit, it may be encouraged, either by chamomile tea, warm water, or a few grains of ipecacuanha; or the antimonial powder, or antimonial wine may be given for the same purpose.

Blisters have been occasionally recommended in this disease, but we think them improper.

The following *saline draught* will be found very useful; it may be given every four hours; it not only determines the fluids to the skin, but contributes to the laxity of the bowels: Take of spearmint-water one fluid-ounce and a half, of sub-carbonate of potash one scruple, to which gradually add lemon juice, till all effervescence ceases. This quantity is for one dose.

An immersion of the legs and feet in warm water, for half an hour or more, at the commencement of the disease, may be of service; and, provided the patient be relieved by it, it may be continued afterwards once or twice a day.

This complaint is not often attended with danger, unless accompanied with

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in affection of some particular part, such as the pleura, stomach, &c., in which case a physician should, by all means, be consulted.

Fever, Bilious. See TYPHUS.

Fever, Eruptive. See CHICKEN-POX, COW-POX, MEASLES, SMALL-POX, SCARLET FEVER, &c.

FEVER, in HORSES, and other domestic animals. Horses and other animals are liable to fever, but there are not those varieties in the disease, nor does it appear so intricate as in the human subject.

The fevers of horses and cattle are referable to three heads:—the common or simple fever, the symptomatic fever, and the malignant, epidemic fever.

In the horse the simple fever begins with a dull or languid appearance, loss of appetite, and quick pulse; sometimes preceded by shivering; the flanks move quicker than usual; the mouth is hot, and sometimes dry; the horse in general restive, the urine high coloured, and evacuated in small quantity. The conjunctive membrane of the eye-lids is often redder than usual. If in this first stage of the disease proper remedies be not employed, inflammation of the lungs, or some internal part, generally takes place; when the fever may be considered as *symptomatic*. See INFLAMMATION INTERNAL.

The first thing to be done in the simple fever of horses or other cattle, is to bleed. In horses five quarts of blood may be taken away, unless the pulse be feeble; and redness of the inner surface of the eye-lids be absent. The blood should be set aside for examination; and if, after it has coagulated, it is pretty firm, and the buffy coat on its surface, the bleeding may be repeated, if there be no abatement of the disorder after an interval of six hours. After bleeding, the costive state of the bowels must be attended to. To remove any indurated dung in the rectum, opening clysters should be injected: when the state of the horse's dung cannot be otherwise known, it should be examined by the hand. If the dung be hard, and in small knobs, the following laxative

drench, or ball, should be given by the mouth; *Laxative drench.* Take of powdered aloes three drachms; of sub-carbonate of potash two drachms; of hot water, four fluidounces; of castor oil eight fluidounces; mix for one dose.

Laxative Ball: Take of Barbadoes aloes, and Castile soap, of each half an ounce; mix for one ball. When a speedy effect is required the drench should be preferred. But, however, if the dung should be found rather loose, and of a healthy appearance, the laxative should be omitted, and the following *fever powder* given in its stead: Take of powdered vitre one ounce; of tartarized antimony two drachms; mix them together; or they may be made into a ball by the addition of a little flour and honey, or treacle. This medicine may be continued twice a day, till the urine is perceptibly increased; after which one dose a day will be sufficient. Should the horse, after these means have been used, become dull and heavy, with a weak, quick pulse, liquid stools, profuse staling, &c., great danger is present. In such case, a powder composed of one drachm of each, ipecacuanha, camphor, and opium, must be given every four hours.

If it should be found proper to give the laxative ball mentioned above, the fever powder may be given after the operation of the laxative has ceased, unless the fever should be so far subdued as to render it unnecessary, a circumstance which often happens when the disease has been seasonably attended to.

Vetches, lucerne, or other green food is preferable for the animal to hay; when these cannot be procured, bran-mashes must be given. The animal should be kept cool but not cold: a hot close stable is injurious; if he can be turned loose in a box, or two or three vacant stalls, it is to be preferred.

Should much weakness remain after the fever, malt may be given in the form of mashes. Tonic medicines are also serviceable; but a good groom often renders such medicines unnecessary.

The directions here given for the

simple fever in horses, are applicable to **CATTLE**.

For *Epidemic Fever* of horses and cattle, see **MURRAIN**.

FEVER-FEW, *Matricaria*, or Mother-wort, a genus of plants, consisting of many species, two indigenous to our own country: the *Parthenium*, or Common fever-few, and the *Chamomilla*, or Chamomile fever-few. They appear to be similar in virtues to chamomile, but are not now used in medicine. The *Double Fever-few*, found in our flower gardens, makes a pleasant variety, and is readily propagated by seeds.

Fever Powder. See **JAMES'S POWDER**.

FIBRE, or **FIBRIN**. When the muscular parts of animals are washed repeatedly in cold water, the matter which remains consists chiefly of albumen, and is, in its chemical properties, analogous to the clot, or *crassamentum* of blood. It is called fibre, or *fibrin*. Fibrin is found in vegetable as well as animal substances; but in larger quantities in the last.

Field-fure. See **THRUSH**.

FIG-TREE, or *Ficus*, in botany, a genus containing fifty-six species, natives either of India, the West Indies, South America, or Australasia. The most celebrated are the following:

The *Indica*, Banyan-tree, or Indian fig, is the glory of the brahmins, in the East Indies; from the munificent display of its fruit, its astonishing longevity, or rather superiority to all decay, and its overspreading arms: for all the branches of this tree, when they have reached a certain height, turn towards the earth, which when they reach, they enter and take root; these, from stem-branches, immediately become radicle or root-branches; in consequence of which, the original tree is possessed at length of a vast multitude of enormous trunks, each increasing in diameter, and rivalling, or nearly so, the trunk from which they sprang. All these trunks are continually sending forth new branches, which are again converted into new trunks, sporting alike with time and space; for the trunks never die spon-

taneously, nor is there any limit to their spontaneous extent.

The largest Banyan tree known to Europeans, is on an island in the river Nerbudda, in the Guzerat. Although high floods have destroyed much of the extent of this tree, it yet measures round the principal stems two thousand feet in circumference; its largest trunks, exceeding our noblest oaks, amount to three hundred and fifty: the smaller are more than three thousand; and it is said that seven thousand persons find ample room to repose under its shade. It is loaded, in its season, with an abundance of fruit, and is able to supply the same number of persons with the enormous quantity which it produces. The small figs which this tree produces are of a rich scarlet colour. Wood pigeons, doves, peacocks, and other birds, monkeys in abundance, and large bats, are inhabitants of this stupendous tree.

The *Sycamorus*, or Sycamore, a large tree frequent in Lower Egypt. It buds in the end of March, and the fruit ripens in the beginning of June. It is cultivated in our country. This tree is the Sycamore of Scripture; but not the sycamore so commonly known in this country. For an account of this last, see **SYCAMORE**.

The *Carica*, or Common fig-tree, which rises with an upright branching stem. The varieties are numerous, and for the most part produce ripe fruit in July and August. It is a native of Asia, but it flourishes in France, Spain, and Italy, and sometimes ripens its fruit in England.

The fig-tree was very much cultivated by the ancients, who brought the fruit to great perfection by a process termed *caprification*. They observed that those figs which were perforated by an insect, the *cynips psenes*, always ripened better, and therefore they tied a wild fig, on which this insect breeds, near the young figs, so as to cause the insects, when they issued from the wild fig, to perforate them. The real cause arose from the crawling of the *larva* within the figs, scattering the pollen, and thus

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forwarding the impregnation of the female florets. It is said, however, that this process may be successfully imitated by wounding the buds of the figs with a straw or feather dipped in sweet oil.

The fruit, when ripe, is dried in ovens to preserve it, and to destroy any of the larvæ of the cynips which remain.

The dietetical use of figs is well known. When eaten freely they produce flatulency, and other dyspeptic inconveniences; and indeed those persons whose digestion is not good should avoid them.

They are used medicinally in demulcent decoctions, in pulmonary and other inflammatory complaints. Two ounces of them boiled in six fluidounces of water, and strained, form a useful gargle in sore throat, when supuration takes place. The figs themselves, roasted or boiled, and split, form excellent cataplasms when applied hot to gum-boils, buboes, and other swellings, where supuration is desired.

The fig-tree may be propagated either by suckers, layers, or cuttings. The season for *laying* them is in autumn; for propagating by *cuttings*, either in autumn, or any time during the month of March; the shoots for this purpose should be those of the preceding summer.

Fig-trees require a free exposure to the rays of the sun against a wall to succeed well. In the winter they should be protected with straw from the severity of frost.

The principal varieties found in England are, the large, dark, purplish blue; the brown or chesnut; the green Ischia; brown Ischia; the Malta; and the round Naples fig.

Fig-leaves might be employed for giving a brownish yellow to cloth; and the wood is almost indestructible.

Fig-eater. See WARBLER.

FIG-WORT, or *Scrophularia*, a genus of plants comprising twenty-five species, natives of warm climates, and three indigenous to the moist hedges, or other wet places of our own country. The following are cultivated flowers; The *Frutescens*, or Shrubby fig-

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wort;—the *Trifoliata*, or Three-leaved fig-wort;—the *Sambucifolia*, or Elder leaved fig-wort;—the *Lucida*, or Shining-leaved fig-wort.

The name *Scrophularia* was given to this genus from some of the species being reputed specifics in scrofula, &c. The *Nodosa*, or Knotty-rooted fig-wort, and the *Aquatica*, or Greater water fig-wort, have been both recommended in such complaints. A recent medical writer, Sir ARTHUR CLARKE, in his "*Mother's Medical Assistant*," recommends an ointment of the leaves of the great fig-wort, as a remedy for scald-head, to be made thus: Take one pound of the fresh leaves of the great fig-wort bruised: boil them in one pound of lard, until the leaves become crisp but not burnt; then strain and keep it covered from the air. See SCALD HEAD.

The *Nodosa* is an indigenous perennial plant, growing in woods and about hedges, and bearing flowers in July, of a dark, blood-red colour. The stem is three feet high, erect, quadrangular, smooth, and leafy; the leaves are serrated, veined, and smooth. The recent leaves have a rank, fœtid odour, resembling elder, and a bitterish, disagreeable taste; but both these qualities are nearly lost by drying. The *Aquatica* grows in watery places, and flowers in July. The leaves are, in taste and smell, similar to the *Nodosa*, but weaker.

Washing swine in a decoction of the leaves of the knotty fig-wort, will, it is said, cure them of the scab.

FIGURE, in language, any mode of speaking in which words are used differently from their literal and primitive sense.

In all ages, amongst uncultivated nations, figurative language forms a striking feature. Thus if any chief exhibit strength in war, and be at the same time of superior stature, instead of a minute description of such a person in a scanty vocabulary, which is not often possible, he would be called at once, perhaps, the *oak of the forest*, or some such metaphor, implying strength. Upon the same principle it is that words have obtained their figu-

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relative meaning ; the common ones of sweet, sour, rich, poor, &c., are not only in meagre languages, but also in very copious ones, applied often in a figurative sense. Thus we say, a sweet child, a sour temper, a rich colour, a poor creature. By a *sweet* child we do not mean that the child is absolutely sweet to the taste, but as sweetness is pleasant to the taste, so is the child and its manners, &c., pleasant to the mind ; by a *sour* temper we do not mean that it is acid to the taste, but as acidity conveys often, an unpleasant sensation to the taste, so does a sour temper to the mind. It is evident that such *tropes*, as they are called, supersede the use of a great variety of words, and, indeed, language both refined and simple is so beset with figures, that it is, in numerous instances, almost wholly composed of them. Figurative language, *if properly chosen*, is a great ornament and advantage, even to our common discourse. In oratory, and the higher kinds of writing it is indispensable. But nothing is more ridiculous than incongruous, or unnatural figures : he, therefore, who indulges in figurative language, should take especial care that the figures which he employs, are agreeable to nature, and to the subject concerning which he either speaks or writes.

Figures. See ARITHMETIC, and DECIMALS.

Filbert. See HAZEL-NUT.

FILE, a tool employed by smiths and others, for smoothing, cutting, or polishing metals, wood, &c.

Files are first made of iron, into the shape desired, then cut with a proper instrument, and afterwards by various processes, the iron is converted into steel. The best files are made at Sheffield.

FILE-FISH, in zoology, a genus of fishes, consisting of twenty-one species, none of which inhabit the European seas. The head of this genus is compressed close to the body, with sometimes a spire between the eyes ; mouth narrow ; teeth in each jaw eight ; aperture of the gills narrow above the pectoral fins ; body, compressed, rough,

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with very minute prickles. They feed on other fishes ; many of them are of a vast size ; most of them suspected to be poisonous : the chief are, the *monaceros*, inhabiting the seas of Asia and South America ; the *tomentosus* and *aculeatus*, both found in the Indian seas ; the *sinensis*, found in the seas of Brasil and China ; the *asati* inhabits the Red sea.

FILLAGREE, or **FILIGREE-WORK**, a kind of enrichment on gold or silver, wrought delicately, in manner of little threads, or grains, or both intermixed.

There is no manufacture which has been more admired, than the fine gold and silver fillagree of Sumatra, especially when the coarseness of the tools employed for the purpose is considered.

FILM, in farriery, a thick skin formed on the eyes of horses, to disperse which, equal parts of common salt and sugar of lead are recommended to be finely powdered, and a small quantity put into the eye, so as to corrode the film ; or a little finely powdered muriate of ammonia may be applied daily to the part affected, till the obstruction is removed.

FILTER, in chemistry, &c., a piece of woollen-cloth, linen, or other matter, used to filtrate or strain liquids through.

Filters are of two sorts : the first are simple pieces of bibulous paper without size, made usually of wool or woollen substances, or cloth, through which the liquor is passed ; the second are twisted up like a skain or wick, first wetted, then squeezed, and one end put into the vessel which contains the liquor to be filtrated, whilst the other end hangs out, and down below the surface of the liquor : the purest part of the liquor distils drop by drop out of the vessel. This filter acts as a siphon.

Water is freed from various impurities by means of basins made of porous stone, called **FILTERING-STONES**, through which the water descends and becomes purified from the grosser matters which it contains. But it should not be forgotten, that water holds lime

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and some other substances in solution, from which simple filtration will not free it.

Other contrivances for filtering water have also been devised. Perhaps, however, one of the most simple and best, is the following: Let a vessel of wood be made in the form of about two-thirds of the length of a square pyramid, whose one-third or pointed part has been removed. Let the smaller end of this frustrum of a pyramid be downwards, and the bottom of it be provided with a grate; over this let there be a layer of charcoal, and upon that another of sand. The water thus strained through the sand and charcoal will be purified; and both sand and charcoal may be changed for fresh, whenever the impurities which they have detained, may render such change necessary.

Or the same square pyramid may be filled with a layer of small clean stones, and another again yet smaller, and lastly, sand may be put on, which will make a very convenient filter.

In the filtration of such bodies as the sulphuric, nitric, and muriatic acids, &c., they must be poured through a stratum of powdered-glass, placed in a glass funnel.

Fin-fish. See WHALE.

FINCH, or *Fringilla*, a genus of birds consisting of one hundred and twelve species, distributed over the globe, of which ten are natives of our own country. The following are most worthy of notice:

The *Calebs*, or Chaffinch, of which there are six varieties. The principal of which is distinguished by the peculiar sound of *chink, chink*, or *pink, pink*, which it often makes. Larger than the goldfinch; builds a neat mossy, whitish nest, and lays five dirty white eggs, spotted with deep brown, or purple. Inhabits Europe, and Africa.

The *Montifringilla*, Mountain-finch, or Brambling. Three varieties. Inhabits Europe and Siberia; one variety, Asia. Eggs yellowish, spotted. Six and a quarter inches long.

The *Carduelis*, Goldfinch, or This-

tle-finch. Too well known to need description. Nine varieties, inhabiting Europe, Asia, and Africa. Sings exquisitely, and is very docile; frequents gardens and orchards, and feeds on various seeds; in the winter assembles together in numbers, feeding at such times on thistle-seeds; builds in apple, pear, or elm-trees; nest white, mossy, and very neat, lays five white eggs, with deep brown, or purple spots. Lives till about the age of twenty years.

The *Canaria*, Canary-bird, or Canary-finch. Two varieties: one, bill and body straw-colour; quill and tail-feathers greenish; the other, body above, brown, eye-brows yellow. Inhabits the Canary Islands; the second variety Africa. Is easily tamed, and domesticated every where for its exquisite song; feeds on various seeds, chiefly hemp and canary-grass. Proves prolific with every species of finch, and even with birds of a different genus, as the yellow-hammer. But the Canary male, is more shy than the female, and will associate with no female but his own species. Its age extends to about fourteen or fifteen years.

The *Spinus*, or Siskin, called in the bird-shops, Aberdavine. Quill-feathers yellow in the middle, the first four without spots; tail-feathers, yellow at the base, and tip with black. Three other varieties. Inhabits our own country, and Europe generally. Feeds on various seeds; is easily tamed, and sings moderately. Four and three quarters inches long.

The *Cannabina*, or Greater Red-pole. Body above, chesnut-brown, beneath reddish white; wings with a longitudinal white band; spot on the crown and breast red; bottom of the breast, blood-red in the male, in the female dirty-brown. Inhabits Europe and America. Easily tamed and cheerful. Five inches and a half long.

The *Linota*, or Common Linnet. Colour chesnut-brown, beneath, whitish; wings with a longitudinal white band; bottom of the breast blood-red in the male, in the female streaked with brown. Eggs five, whitish, with ches-

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nut spots ; sings delightfully, inhabits Europe. Five and a half inches long.

The *Montium*, Twite, or Mountain-linnet. Black, varied with reddish, beneath whitish ; feathers of the lower part of the neck black in the middle ; wings with a white band ; rump red. Inhabits Europe. Has no note, but merely twitters. Six and a half inches long.

The *Domestica*, or House-sparrow. Four varieties. Inhabits Europe, Asia, and Africa. Five and three quarters inches long. Builds under the eaves of houses, both thatched and tiled, sometimes in ivy, and sometimes in other birds' nests : we have seen a house-sparrow's nest in that of a magpie. Feeds on grain, and infests gardens ; proverbially salacious ; eggs of a dirty, spotted, ash-colour ; crafty and not easily snared. Very destructive to ripe corn.

The *Petronia*, or Ring-sparrow. Colour grey ; eye-brows white ; chin pale yellow. Two other varieties. Inhabits Europe, chiefly Germany ; five and three quarters inches long ; builds in hollow trees.

Fineering. See VENERING.

Fining. See CLARIFICATION.

FIORIN, or *Agrostis stolonifera*, a species of bent-grass, which has been lately much extolled for the quantity of its produce. To obtain it in perfection a moist climate or a wet soil is necessary ; it grows luxuriantly in cold clays, unfitted for other grasses. In light sand, and dry situations, its produce is much inferior both in quantity and quality. On mere bogs, this plant yields a great weight of herbage ; and is perhaps the most useful plant that bogs can produce. Fiorin, and other species of *agrostis*, supply pasture throughout the year ; the concrete sap stored up in their joints, render them a good food for cattle, even in winter.

Fir-tree. See PINE.

FIRE, in natural philosophy, combustion ; the decomposition of combustible bodies, accompanied with light and heat. Fire is not a substance, but a quality. In order to produce the process called fire, the presence of a combustible body is necessary ; such

body must also consume or waste away, by a new action introduced into it ; and this action must also be attended with an emission of light and heat. All these may exist separately, but it is the compound operation, resulting from the union of the whole, which produces combustion, or fire. For a further account of the chemical properties of fire, see HEAT.

Fire, although one of the most useful processes for the convenience and comfort of man, is often converted into a scourge, laying houses, streets, and sometimes, even whole towns, in ashes. Too much care cannot, therefore, be taken to guard against this destructive element.

Numerous expedients have been proposed to preserve buildings from fire. But, it appears to us, that the best remedy against fire is CIRCUMSPECTION and CARE ; and from having been extensively concerned in buildings where combustible materials were in abundance, we have reason to know that, if *masters of families*, every night previously to going to bed, *personally* inspect the state of the rooms in which fires have been during the day, and anticipate the carelessness of servants, by providing them with lamps, lanthorns, or suitable candlesticks, to light them to bed ; and if the proprietors of warehouses, and shops, will also personally inspect their state, where either fires or candles have been used, every night, and in the DARK, we are convinced that fires would be comparatively rare. *Carelessness, negligence, and thoughtlessness*, are, beyond question, the chief causes of them.

But, however, notwithstanding all our care, fires will sometimes happen. In populous towns in particular, they are often very alarming and destructive. Whenever, therefore, a fire happens, particularly if it be in the night, and the reader should happen to be an inmate of the dwelling on fire, his first care ought to be to obtain presence of mind, in order that he may be enabled to take the best means which may offer for his safety. What those means may

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be must depend upon a variety of circumstances ; but if he should be in a bed-room, having a bed in it, and cannot descend the stairs, and no other means offer for his escape, the bed-clothes, particularly the sheets, may be converted into a kind of rope, and tied to the post of the bed ; and, very often, these will enable a person to effect his escape by the window. Or, if no other possible expedient offer, the bed itself may be thrown into the street, held up by the by-standers, and the person in danger may precipitate himself with some prospect of successful escape. Relative to beds, it has been suggested that when persons are in such perilous situations, the cry of " FIRE ! " accompanied with the words " FEATHER-BEDS ! " loudly and distinctly vociferated, would prompt the neighbours to supply these important articles, to be held up by the by-standers, in order that the inmates of the house in flames may precipitate themselves upon them, and be saved.

One of the means of escaping from a house, when the lower part of it is on fire, and you cannot descend, is *through the roof*. This, in many cases might be easily effected. After ascending to the upper room, and shutting the door to prevent a current of air, a hole may be made in a few minutes through the lath and plaster of the ceiling, and the tiled or slated roof, by a poker, the back of a chair, or a tester rod, and a way of exit procured. There are few cases where a table or box would not elevate a person high enough ; and still fewer where the roof would resist the force even of a woman.

As escaping from a house on fire is of great moment, we may be pardoned for going a little into detail on this subject. If, therefore, you were roused from your sleep with the cry of FIRE ! and informed that the house in which you had been sleeping was in flames, after collecting all the *presence of mind* of which you are capable, and having slipped on any part of your clothes which might be at hand, you might look out of the window to see or to in-

quire in what direction the flames were acting ; you would then judge whether you might descend by the stairs, in order that you might not unnecessarily expose your limbs, or your life, by a leap from the window. If you could not descend those stairs there might be other stairs in the house, of which you might avail yourself. If this should not be the case, it is possible that, by getting upon the leads, or creeping upon the roof of the house, you might reach an adjoining house or other building, and thus be removed from danger till some means are offered you to reach the ground. Should you not succeed in these attempts, or should you not be able to make them, and you must, after all, make your exit by the window, when there *preserve your presence of mind*. Perhaps some friend or neighbour might have placed a ladder against your window, of which you may avail yourself. Should this not be the case, you must consider about letting yourself down. If there be more than one window in the room, or within reach, it may be desirable to consider which is the best for the purpose : for below the one may be iron rails, or hard stones, and under the other a garden, or soft grass. Your window being chosen, throw out your bed, so as to alight in a proper place to receive you ; and then, if you have not a rope-ladder, or a fire-escape, (see FIRE-ESCAPE,) proceed to let yourself down by means of the sheets tied together and securely fastened to the window, the bed-post, or any thing else which will hold them securely. Be careful to keep such hold of your sheets as not to drop from them till you come to their lower end, or you touch the ground. In descending you will either let the sheets slip through your hands, or else, which is perhaps preferable, you will remove one of your hands, and then the other, alternately, lower and lower : and finally, when you are arrived at the end of the sheet, if you cannot touch the ground, you will either drop or spring from your hold, as circumstances might require. In fastening the sheets together, a single,

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but hard knot should be previously tied at the extremity of the corner of each sheet, in order that the double knot, to be afterwards tied, might not slip.

If a person should be so shut up by the flames, that, in order to escape, he must pass through them, or a part of them, a blanket wrapped round him, and *wetted if possible*, promises the best success. This is, however a very dangerous expedient, and should not be resorted to till all other methods have failed.

If you should consider your own place of descent to be more safe and proper than any other, and there be other persons in the house, you will of course assist, consistent with your own personal safety, as many of them to escape as you can. Children and timid persons, who cannot descend by themselves, may be lowered in a basket, or by a sheet tied round the body; or very small children may be wrapped in a blanket, and, if no better means offer, tossed out to the by-standers.

Having thus stated the best means of escaping from a house on fire, it is now necessary that we should point out the duties of those who *discover a house to be on fire*.

A person living in London, unless he be a magistrate, a soldier, a peace officer, or otherwise interested in the fire, might, when he discovers a house on fire, think it sufficient to alarm the family and the watchmen; to give notice to the nearest fire-offices; and, before effectual assistance arrive, to assist the inhabitants in making their escape, and in saving their goods; he might also search for the nearest fire-plug, for a supply of water; and when the firemen had arrived, he would most likely leave the management of the whole affair to them, who, being more expert in the business, would not want the assistance of the inexperienced.

But in the country, where there are no such companies of trained men, in case of fire, every body may be of service who knows how to act, and therefore, it is the duty of every person to pay so much attention to the subject as

may qualify him for being useful on such occasions.

Supposing, then, in the case before us, it be a house, and that the inhabitants are escaping from the scene of danger, they should be assisted also in the removal of their goods; at the same time, an alarm should be made as general as possible, in order to collect assistance. Some persons should be sent for the nearest engines: and if there be none in the town or the village where the fire happens, waggons should be sent for them both for expedition and safety. The utmost dispatch should be used in collecting buckets, pails, and other vessels; and the nearest supplies of water should be sought for, and the passages to them cleared.

Whether engines are to be supplied with water, or whether the water be thrown at once on the fire, from buckets, pails, &c., a lane should be formed, if the attendants be sufficiently numerous, by ranging them in a double line, from the water to the engine, or fire; and let the *men* be placed on one side to hand the *full* buckets, &c. from one to the other, and the boys and women on the other side, to convey back the empty ones. The person who happens to be stationed next the water, or who fills the buckets, ought to be careful that no loose stones or gravel be taken up with the water, as these often stop the engine, or damage it materially.

Every thing being ready, the engines should play, not upon the centre of the flames, unless there be a fair prospect of extinguishing them speedily, but rather on every side, to prevent their spreading. If they should, nevertheless, be extending, and the adjoining buildings in great danger, it will be right to consider how the communication may be cut off; whether by pulling down a part of those buildings, or otherwise. Wet blankets, or cloths, may also be provided to be put upon the neighbouring houses, as well as upon stacks of corn, hay, &c., if such should happen to be near.

Sometimes where there are no hopes of saving the house, it may be most ad-

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visible as speedily as possible, to pull it down, by means of fire-hooks or other instruments, which might be at hand; some of the materials might possibly be saved, and the fire itself be choked or dispersed. But this measure requires grave consideration, more especially if it be in narrow streets and a populous neighbourhood.

In passing from room to room, where the flames do not prevail to such a degree as to endanger life, the London firemen *creep along the floor*, with their faces as near to it as to allow them to move, and in this manner they escape suffocation from the smoke and heated air in the upper part of it. So expert are they, that it is said they will pass with ease and safety along many parts of a burning house, which, to the spectators, appear inaccessible. This fact cannot be too generally known. In most fires the lighter and suffocating air commonly ascends; the purest air remains below.

Fires in Chimneys, arising from soot, are seldom attended with danger, unless concealed wood come in contact with them. However, they ought to be put out as soon as possible. Firing a loaded gun or pistol up the chimney, has sometimes dislodged the burning soot; letting down a rope, to the middle of which is tied a bunch of wet straw, or similar substance, and by which it can be drawn up and down, will effectually clear it of its burning contents. Cutting off the supply of external air, if it can be accomplished, will effectually extinguish the fire; for this purpose, the upper as well as lower orifice of the chimney may be stopped with a wet blanket; the chimney should have no communication with the air from any other quarter, or the attempt will be fruitless.

The best method of preventing fires in chimneys, is to keep them free from soot.

The best *fluid*, because it is the most plenty, and the cheapest, for *extinguishing fires*, is WATER; but many compositions have been invented for this purpose. The following mixtures

will put out fire more speedily than water alone: Take of water 75 gallons; clay 10 quarts; sulphate of iron 10 quarts; common salt 10 quarts.—Take of water 75 gallons; strong solution of wood-ashes 18 quarts; fine clay reduced to powder, 18 quarts.—Take of water 75 gallons; red ochre, or the residuum of aquafortis, 15 quarts; common salt 15 quarts.—Take of water 75 gallons; strong herring pickle 15 quarts; red ochre 15 quarts. The following, however, is said to be the most powerful: Take of burnt alum 30lbs.; of sulphate of iron, in powder, 40lbs; of red ochre, powdered, 20lbs; potters', or other clay, finely powdered, 200lbs; of water 630lbs.

Children and females very often lose their lives, or are miserably burnt, from their clothes catching fire; the first most commonly from being left alone, the latter from the extreme lightness and combustibility of their dress, and their carelessness in approaching too near either to the fire or the flame of a candle.

If such an accident should happen, either to a female or child, another person being present, and the flame cannot be extinguished at once, the child or female should be immediately *laid down on the floor*, and, if there be a carpet or hearth-rug, she should be immediately rolled up in it. In the absence of these, a cloth from the table, or even your own coat might be thrown about her. Whatever is done should be done expeditiously. If the female be alone, she will find her safest method is TO LIE DOWN IMMEDIATELY, and gather the hearth rug, carpet, or other cloths over her; to run out of the room in a blaze is almost always certain destruction, as assistance, under such circumstances, comes most frequently too late. If there should be no carpet in the room, or if it should be fastened down, which for this reason alone we advise it never should be, a cloth has been recommended to be kept in the sitting rooms of ladies, to be distinguished by the appropriate name of *safety-cloth*, which might be always at

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haul. In poor-houses, and cottages, a bed-quilt thrown round the person on fire, would soon put out the flames. See **BURNS**.

Amongst the methods of guarding buildings against fire, the following may be mentioned :

A patent was some years since granted to **DAVID HARTLEY, Esq.**, for securing buildings and ships from this destructive element. The method is ingenious, but it is not, we believe, at the present time, any where acted upon.

The late lord **STANHOPE** also invented a method of securing floors from the attack or progress of fire ; a method which it is not difficult to employ in building new houses, or re-laying floors, and which appears to be well calculated to answer the purpose which his lordship had in view. His method is divided into three parts, *under-flooring, extra-lathing, and inter-seaming*. But we have not room to detail these processes ; they will be found in Mr. **BOSWORTH's** little volume, "*Accidents of Human Life*."

Another method of securing houses from fire has been recommended by Mr. **B. COOK**, of Birmingham, who proposes not only that the rafters and beams should be formed of *Iron*, and cut hollow ; but that the flooring joists should be also made of the same material. If these latter were made light and laid nearer each other than wooden joists usually are, and if they were cast with a small projecting edge at the bottom, so that, when laid down, flat tiles, or other incombustible materials, may be laid between each pair of joists, and the spaces filled up with tiles made on purpose, or even rubbish well pressed, the floor would of course be fire-proof, or almost so. The boards might be screwed down with very little trouble. The whole plan appears to us to be as effectual as lord Stanhope's, without so much expense. Mr. Cook recommends also *Iron* stair-cases. And an *iron roof* has also been lately put up at Newport, in Monmouthshire. Such roofs are, it is said, applicable to buildings of all sizes, can be put up at much less ex-

pense per square than any other, and are evidently far more durable. Such methods of building, must, of course, contribute much to security from fire.

When houses are built close together, as in streets, it is of great importance to have *party walls*, by which the progress of fire is often stopped. In London this plan is enforced by Act of Parliament. Partitions between rooms which are plastered or stuccoed, are much more safe than those which are wainscoted ; and solid brick partitions, if only four inches broad, are better still.

Besides the precautions relative to the structure of buildings, it should not be forgotten that houses have been set on fire, and sometimes have been destroyed, by the carelessness of servants in *throwing out cinders before they have been cool ; by leaving linen to dry before the fire ; by the falling of the red-hot poker on the floor*, when it has been incautiously, as it is often very improperly, *left in the fire ; by dropping sparks from a candle*, and by various other means. Children and young persons have also been the cause of great mischief by playing with lighted straw, paper, &c. *Reading in bed* by candle light ought by no means to be recommended, or even allowed, particularly to the young, the giddy, and the thoughtless : many fires have occurred from this practice, and it should therefore be laid aside.

All the laws relative to the prevention, &c. of fire, were reduced into one statute, and former statutes repealed, by 12 GEO. III, cap. 73.

FIRE-COCKS, or **FIRE-PLUGS**, are, in London, fixed into pipes at proper positions, from which water may be drawn for extinguishing fires. Churchwardens in London, and within the Bills of Mortality, are to fix fire-cocks, or plugs, at proper distances in streets, and proper marks near them, and to keep in every house thus marked an instrument, or key, for opening the plug, and a large engine, and hand-engine, for extinguishing fire, under the penalty of £10.

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Fire-Damp. See CARBURETTED HYDROGEN.

FIRE-ENGINE, a machine for extinguishing accidental fires, by means of a stream or jet of water.

The common squirting fire engine consists of a lifting pump, placed in a circular, or cylindrical vessel of water, and wrought by two levers, which act always together. During the stroke the quantity of water raised by the piston of the pump spouts with force through a pipe, joined to a pump barrel, and made capable of any degree of elevation, by means of a yielding leather pipe, or by a ball and socket, turning every way, screwed on the top of the pump. The vessel containing the water is covered with a strainer, to prevent any dirt or filth from choking the pump-work. Between the strokes of this engine the stream is discontinued for want of an air vessel.

The late improvements made in fire-engines have been very great. We cannot pretend to specify them. The engine invented by ROWNTREE and Co., is very ingenious. And a very ingenious and useful fire-engine, invented by Mr. B. DEARBORN, is described in the *Trans. of the American Academy* for 1794. The advantages of this machine are, that it can be made in any place where common pumps are manufactured; the interior work will not exceed one-fourth of the price of those constructed on the usual plan; and it is incomparably more easy to be worked than the common ones; circumstances which strongly recommend the American fire-engine to the attention of the public.

FIRE-ESCAPE. Besides ladders, which every one knows form excellent fire-escapes, many contrivances, for the purpose of rescuing persons in imminent danger from fire, have been invented. The following are, we believe, the best.

The *Fire-Escape*, so called, consists of a pole, a rope, and a basket. The pole is of fir, or a common scaffold pole, of any convenient length, from 36 to 46 feet. The diameter at the bottom,

or greatest end, is about five inches, and at the top, or smallest end, about three inches. At three feet from the top is a mortise through the pole, and a pulley fixed in it, of about the same diameter with the pole in that part. The rope is about three quarters of an inch in diameter, and twice the length of the pole, with a spring hook at one end, to pass through the handle of the basket; when used, it is put through the mortise over the pulley, and then drawn tight on each side, to near the bottom of the pole, and made fast there till wanted. The basket should be of strong wicker work, three feet and a half long, two feet and a half wide, rounded at the corners, and four feet deep, rounding every way at the bottom. To the top of the basket is fixed a strong iron curve, or handle, with an eye or ring in the middle; and to one side of the basket, near the top, is fixed a small cord, or guide rope, of about the length of the pole. When the pole is set against a house, over a window from which any persons are to escape, the manner of using it is so plain and obvious that it need not be described.

It will be convenient to have two small poles, or spars, about two inches in diameter, fixed to the sides of the great pole, at about two or three feet above the middle of it, by iron eyes, rivetted to two plates, so as to turn every way; the lower ends of these spars should reach within a foot of the bottom of the great pole, and they should have, as well as the great pole itself, spikes at the bottom, to prevent sliding, when they are used occasionally to support the great pole, by projecting like a tripod. Two strong ash pins should be driven through the principal pole, one at four feet, and the other at five feet from the bottom, to serve as handles, or to twist the rope round in lowering heavy weights. If a block and pulley were fixed at about the middle of the rope, above the other pulley, and the other part of the rope made to run double, it would diminish any weight in the basket nearly one half, and be otherwise useful, particularly in drawing

up any person to the assistance of those in the chambers, &c. Such a pole must always have the rope ready-fixed to it; and it may be conveniently laid up under a shed or gate-way. It should be painted of a light stone colour, in order that it may be more visible in the night.

A **PATENT FIRE-ESCAPE**, invented, we believe, by a Mr. MORRISON, of Picket-street, Strand, London, attracted considerable attention some years since, and is a very ingenious contrivance, but we have not room to describe it. The facility with which it operates is such, that seven persons may be let down with it from a four pair of stairs window in three minutes. It is described in Bosworth's "Accidents of Human Life."

Perhaps, after all, nothing is better calculated for general adoption, particularly where expense is an object, than a fringed or a knotted rope. A few yards of either of these kept in a bed-chamber, ready to be fastened to a window, the leg of a table, or a bedstead, might often prove of the utmost service. A rope ladder has also been mentioned. The simplest form is that recommended by Captain MANBY: stiff loops are strongly spliced to a rope, at the distance of a foot and a half apart, and are of sufficient size to allow the foot to be easily placed in and drawn out in descending.

FIRE-FLY, or *Lampyrus*, in zoology, a genus of insects consisting of fifty-two species, scattered over the four quarters of the globe, two of which only are found in our own country. The following are the chief.

The *Noctiluca*, or Glow-worm, of a brown colour, and oblong shape. Inhabits the dry woods and banks of our own country, and other parts of Europe. The female is longer than the male, and emits a beautiful light for the purpose of attracting the male; this issues from the four last ribs of the abdomen. The male emits only a feeble light. This singular phenomenon is observed most frequently in the month of June. The female can withdraw or display this light at pleasure. When crushed with

the hand, the luminous substances adhere to it, and continues to shine till it is dried up. It has been supposed to be, but really is not, phosphorescent. It afterwards becomes a fly, and wanders about chiefly in autumn.

The *Japonica*, of a yellow colour, inhabits Japan; flies abroad in the evenings of May and June, scattering a luminous vapour from two vesicles at the end of the tail.

The *Depressa*, inhabiting India.

The *Coccinea*; head, thorax, and shells sanguineous; body black; inhabits England and other parts of Europe; rarely in any degree luminous.

The *Pennsylvania*, is oblong, with grey shells; inhabits America, and emits a light in the evening like the glow-worm.

The eggs of all these are minute, of a yellowish hue, and deposited on grass leaves.

FIRE-PLACES, in domestic economy, are the places in which fire is burnt; but, in a more confined sense, the term implies those implements usually made of iron, called stoves, register-grates, &c.

In addition to what we have said relative to fire-places under the article CHIMNEY, we may observe here, that in the construction of fire-places, it is now perfectly well known that a narrow passage for the exit of the smoke, is generally better than a wide one; that the back of the chimney should always be built perfectly upright; and, in the course of numerous experiments, it has been found, that when the back of the chimney is of a proper width, the best width for the throat of the chimney, when the chimney and the fire-place are of the usual form and size, is four inches. Three inches might sometimes answer, especially where the chimney is very small, good, and well situated.

It is quite impossible for us to enumerate the various improvements which have been made in fire-places during the last twenty years. The forms of register grates alone are so numerous, and we may add, in some instances, so fanciful, that we scarcely know which to select, or which to recommend. The

principal objects in the construction of fire-places, must be a diffusion of heat in the apartment, and a saving of fuel. To effectuate both these purposes, the grate should stand as far forward in the room as it possibly can be placed, consistently with its discharging the smoke well ; six inches from the top bar to the back of the grate, are amply sufficient for the depth of the fire ; the width of which should not be less than one foot, and in height nine inches, for a moderate-sized apartment. The great error still remaining to be remedied in the construction of almost all stoves and fire-places of our sitting rooms is, that of the grate's being **TOO DEEP** : much of the heat of the fire by such means is lost. We doubt altogether, however, the utility of circular bars bending outwards. They may be thought more tasty, and we know that *Count RUMFORD* recommended them, but we think that straight bars are, on every account, to be preferred. See **STOVE**, and **FURNACE**.

Fire-Proof. See **FIRE**.

FIRE-WORKS, are preparations made of gunpowder, sulphur, and other inflammable and combustible ingredients, used on occasion of public rejoicings, and other fêtes.

How beautiful soever such amusement may be, as they are always attended with considerable danger, they ought to be discountenanced. The use of squibs, crackers, &c., so commonly found in the hands of children and young persons, should be totally prohibited.

FIRING, a severe operation often performed on horses for old strains, spavins, curbs, ring bones, &c. It consists in drawing lines in various directions on the affected part, with a red-hot iron, called a **FIRING-IRON**.

In firing, it is a rule that no part is in a fit state for this operation when the limb is hot and inflamed ; and that the skin should be never penetrated with the iron. Immediately after a horse has been fired, a mild blister should be applied to the part ; and the first night the horse should be tied up

short, to prevent him from biting or rubbing the part. The following day he may be turned loose into a box ; to prevent his rubbing the part, the neck-lace, or cradle, should be placed round his neck. In a week the fired part will become dry ; some oil should then be applied to it, and the horse turned to grass.

FIRZIN, an English measure for liquids, containing the fourth part of a barrel, or nine gallons of beer.

FISH, in natural history, an animal having either fins, or scales, or both ; and inhabiting, as its natural element, water.

These animals have been divided into *fresh* and *salt* water fishes ; but many of them live in both kinds of water.

According to **LINNÆUS**, there are about 400 species of this animal, with which naturalists are acquainted ; but our knowledge of fishes is constantly increasing : although it is probable that the unknown species are even now more numerous than those which are known.

For the qualities of fish as food, see **ALIMENT**.

Fish-Glue. See **ISINGLASS**.

Fish, Gold. See **CARP**.

FISH-PONDS, are reservoirs of water, made for the breeding or keeping of fish.

In addition to what is said under the article **BREEDING OF FISH**, we may observe that pike, perch, tench, roach, &c. breed almost in any water, and very numerously. Eels never breed in standing waters without springs ; and what is extraordinary, no person ever saw the least token of their propagation, either by melt or spawn, so that the method by which the eel is propagated is still unknown. The fecundity of fishes is wonderful : a pike caught in the Rhine, weighing only nine pounds, had 140,000 eggs in it ; and a carp has been taken containing upwards of 348,000.

In selecting a spot for ponds, those grounds are best which are full of springs, or moorish. The condition of the place must determine the quantity of ground to be covered with water ; but fifteen acres in three ponds, or eight

acres in two, not less: these ponds should be one above another, so that the point of the lower may almost reach the head or bank of the upper, which contrivance is no less ornamental than advantageous.

If the pond have six feet of water it is enough; but it should be eight feet deep to receive the freshes and rains which fall into it.

It is advantageous to have shoals on the sides, for the fishes to sun themselves and lay their spawn on; and in other places certain holes, hollow banks, shelves, roots of trees, islands, &c., to serve as their retiring places.

For large carp, a store pond is accounted the best; and to make a breeding pond become a store pond, put in all milters, or all spawners, and in a little time you may have them both large and exceedingly fat. Other fishes may be managed in the same way, roach excepted, which multiply notwithstanding such seclusion.

In regard to the food for fishes, it is various; hot, boiled grain, especially pease and malt coarsely ground; the grains after brewing, while fresh and sweet, are some of the best; chippings of bread, scraps off a table, steeped in tap-droppings of strong beer, are an excellent food for carp. The best food to make pikes extraordinarily fat is eels.

There is a sort of food for fishes which may be called accidental, but it is the best: such is the wash of commons where many sheep have pastured; the dung which falls from cattle standing in the water in hot weather, is also very valuable; it is therefore advisable to have fish ponds in cow pastures and grazing grounds. Nor should it be forgotten that those ponds which receive the stale and dung of horses, breed the largest and fattest fish.

Breaking down the head of a fish pond, whereby the fish may be lost, is felony without benefit of clergy.

FISHERY, a place where great numbers of fish are caught.

The principal fisheries for salmon, herrings, mackerel, pilchards, &c. are along the coasts of England, Scotland,

and Ireland; for cod on the banks of Newfoundland; for whales about Greenland and the South Seas, and for pearls in the East and West Indies.

The fisheries are regulated by various acts of parliament. The number of seamen at present employed in our fisheries is estimated at 120,000; and the annual value of the fish consumed and re-exported from the city of London alone, at three millions of pounds sterling! Notwithstanding which our fisheries are susceptible of considerable improvement and extension: for, at present, the inhabitants of the inland districts of the kingdom have few opportunities of obtaining fish at all.

FISHING, is the art of catching fish, whether by means of nets, spears, or of the line and hook. That which is performed by the net, spear, or harpoon, and generally in the large way, in large rivers, or the ocean, is foreign to the nature of our work: that by the rod, line, and solitary hook, and commonly in fresh-water rivers, is termed **ANGLING**, which see.

The principal fishing streams in England are the Thames, Severn, Trent, Tyne, Tweed, Medway, Tees, Dove, Isis, Thame, Kennet, Willey, Avon, Lea, Trevel, Nen, Welland, Darwent, Calder, Wharf, Nid, Don, Swale, Hull, Guse, Aire, Parret and Axe. The principal streams in Wales are the Dee, Wye, Conway, Tivy, Chedley day, Chud, Usk, Towy, Taff, and Dovy.

Besides the Thames, the following rivers, which empty themselves into it, afford more or less fish for the angler: Ilford, Woodford, Stratford, Row, Hackney, Waltham, the New River, Brentford, Hounslow, the Colne, Uxbridge: these are all north of the Thames. On the south are the rivers of Deptford, Lewisham, Wandsworth, Mitcham, Martin, Carshalton, Moulsey, Esher, Cotham, Weybridge, and Byfleet.

Of fishing, as an amusement, we have expressed our disapprobation under angling. And although Mr. ISAAC WALTON's book, entitled the "*Complete Angler*" has, from the style in which it

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is written, as well as the matter which it contains, tempted many persons to fall in love with this solitary recreation, yet, in our deliberate opinion, it is generally a very unwholesome one, in which neither the mind nor the body can be sufficiently engaged; and were there no moral reasons for our disapproving of this sport, that in regard to health would be amply sufficient to induce us to dissuade our readers from pursuing it: but when, in addition to this, we consider that animals are to be put to the torture to gratify our silly inclination for sport and amusement, surely an election on such a subject must be instantly made. If fish be desirable, much better methods of obtaining them may be found than by the barbarity of a hook and line.

FISTULA, a term in surgery, applied to a long and sinuous ulcer that has a narrow opening, which sometimes leads to a larger cavity.

There are several kinds of this formidable disease:

The *Fistula lachrymalis* is an ulcer of the sac, in which the tears are secreted. The most simple state of this disease is that termed a *dropsy of the lachrymal sac*. The symptoms are, a tumour between the inner cornea of the eye and the side of the nose. This disappears by pressure, the tears mixed with mucus, passing partly into the nose, but chiefly back upon the eye, and over the cheek. It is often met with in children who have been rickety. In this state it sometimes remains for years, subject to little alteration; and if the sac be not much dilated, the discharge small, and produced only by pressure, the chief inconveniences are the weeping eye, and the gumming of the eye-lids during sleep; these being attended to, and if the disease does not grow worse, may be kept from being very troublesome, and so regulated as to render any more painful process unnecessary. But when the disease increases, the tumour bursts, and tears, mucus, and purulent matter are discharged from the sore, an experienced surgeon should be at once consulted.

Indeed, even in the first stages of this disease, the safest way is to call in an experienced practitioner.

The *Fistula in ano*, is a sinuous ulcer in the neighbourhood of the rectum. It is produced by piles, hardened faeces, &c.

As soon as a swelling about the anus appears to terminate in suppuration, every thing ought to be done which can accelerate the formation of matter. A proper degree of heat, warm poultices, fomentations, and the steam of warm water, are the best suited for this purpose; and as soon as matter is formed, it ought to be discharged by a free incision in the lowest part of the tumour. But as no one would venture to be his own surgeon in this disease, we can only advise the patient to apply to the most experienced at once, and without delay.

The *Fistula in Perinæo*, commonly communicates with the urethra, sometimes with the bladder. It may arise from various causes, but is most frequently occasioned by venereal complaints. In this, as in the last-mentioned disease, the advice of a skilful surgeon should be taken without delay.

FISTULA of the WITHERS, an obstinate disease of the horse's withers, commonly caused by a bruise from the saddle.

If swelling and inflammation arise from the pressure of the saddle on the withers of a horse, the saddle should be immediately removed, and the part should be bathed often with Goulard's extract, vinegar and water, or the following lotion: Take two ounces of acetate of lead; one pint of vinegar, and one gallon of water: mix them together. This, in general, will remove the complaint, provided care be taken that no fresh irritation of any kind be applied to the part, and that the saddle which caused the swelling, be exchanged for another, or the same re-stuffed, so as to fit the back of the horse with perfect ease and comfort.

If, however, the swelling increases, and cannot be readily dispersed by the

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saturine solution, the suppuration should be promoted by poultices. When the abscess has become soft, and the suppurative process appears to be complete, an opening should be made in it with a lancet; when the matter is discharged, the ulcer should be examined with a probe, and the sinuses formed, either forward or backwards, should be completely laid open with a straight, probe-pointed bistoury. If the matter has penetrated downwards, in the direction of the shoulder, a seton may be passed through the sinus, from the opening above, to its lowest part, taking care that the lower opening is sufficiently large to allow the matter to run off freely. The first dressing may be a mild caustic, or an escharotic; but in old and obstinate cases, the stronger caustics are often necessary. Ointment of nitrated quicksilver mixed with oil of turpentine; or a strong solution of sulphate of copper, with the addition of a little muriatic acid, will, in the first stage of this complaint, be found to answer the purpose. When the sore assumes a more healthy appearance, milder applications will be proper.

In more inveterate cases, muriate of antimony is a useful application; or, take of train-oil and oil of turpentine, of each eight fluidounces; of verdigris and corrosive sublimate, of each half an ounce: put the whole into an iron ladle, let it be made nearly boiling hot, and in this state the mixture is to be applied to the diseased parts, by means of a little tow fastened to the end of a probe or stick.

The sound parts of the skin of the animal should be protected from these caustic preparations, as well as from the acrimonious matter flowing from the fistula itself: for this purpose washing them once a day, and smearing them over with lard afterwards, will be found very serviceable.

It will be highly necessary to ascertain, whether there be any cavity or sinus, in which the matter is detained; and if such should be found, it should be either laid open completely, or an

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opening made in the lowest part, so that the matter may escape.

The edges and sides of these fistulas, are sometimes considerably thickened: in fistulas, as well as in poll-evil, such thickened matter may be cut out with considerable advantage. When the bones of the withers are exposed, and feel rough, they should be scraped with a drawing-knife, or other instrument, and afterwards covered with lint dipped in compound tincture of myrrh.

Fits. See CONVULSIONS, EPILEPSY, HYSTERICS and SPASMS.

Fixed air. See CARBONIC ACID.

Flag. See IRIS.

FLAG, the SWEET, or *Acoris calamus*, an indigenous, perennial-rooted plant, growing in marshes and rivulets, over the greater part of Europe and Asia: it flowers in this country in May and June. The leaves are sword-shaped, about three feet in length, generally waved along one of the edges, of a bright green colour, and they emit a strong aromatic odour when bruised. The root has a pleasant aromatic odour, and a warm, bitterish, pungent taste. The roots met with in the shops, are mostly brought from Norfolk.

The dried root is used in medicine as a tonic and aromatic; and is a useful addition to other bitters in dyspepsia. The dose in substance is from one scruple to a drachm, and of an infusion made with six drachms of the bruised root, in twelve fluidounces of boiling-water, a tea-cup full three or four times a day.

This root is sometimes used to impart an agreeable smell to the compound spirit of ammonia.

FLAG, the CORN, or *Gladiolus*, a genus of plants, consisting of fifty-two species, a few natives of Russia, or the south of Europe, the rest Cape plants. The *Communis*, or Common-Corn-flag, a native of the south of Europe, with white or red flowers; the *Cardinalis*, a native of the Cape, a very elegant plant; and the *Rosalbus*, with flowers pale-rosy, are among the chief.

Flail. See THRESHING.

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FLAME, a luminous and gaseous fluid, emanating from various bodies in a state of combustion. Hydrogen gas is supposed to furnish the purest form of flame which can be exhibited: for the flames of bodies which emit much light, derive that power from solid matter, which is intensely ignited, and diffused through them, and which, in ordinary flames, as of gas, tallow, wax, oil, &c., consists of finely divided charcoal. The presence of flame always implies a certain degree of intensity of heat; if, therefore, we cool the burning body by any means, below the degree necessary to produce flame, the flame will be extinguished. This may be effected by causing it to pass through fine wire-gauze, which is an excellent conductor and radiator of heat, and consequently possessed of great cooling power. Thus, if a piece of fine brass or iron wire-gauze, be brought down upon the flame of a candle, or, what answers better, upon an inflamed jet of coal-gas, it will, as it were, cut the flame in half. That the cooled gaseous matter passes through, may be shown by lighting it upon the upper surface. The discovery of these facts, respecting the nature and properties of flame, led Sir HUMPHRY DAVY to apply them to the construction of the miner's SAFETY-LAMP, which see.

FLANNEL, a kind of woollen-cloth, composed of a woof and warp, and woven on a loom, with two treadles, after the manner of baize.

The wearing of flannel next the skin, particularly to rickets, and to persons advancing in life, can scarcely be too much insisted upon; but we do not perceive the utility of its being worn by the young, nor by the healthy and robust, who have not attained the meridian of life: indeed, to keep such persons too warm, which flannel is calculated to do, is certainly injurious.

Elaborate reasonings, with great gravity, have been published relative to the powers of flannel in preventing diseases, and keeping the body warm, but, we believe, they may be all resolved into one, that of its being a *slow con-*

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ductor of heat, as indeed all wool and woollen-cloths are.

FLAT-FISH, or *Pleuronectes*, a genus of fishes, consisting of twenty-nine species, scattered through the seas of the globe generally; chiefly, however, those of Europe and America. About twelve species are found near our own coasts.

This genus has the head small; eyes spherical, both on the same side of the head, and near each other; mouth arched; jaws unequal, toothed; gill membrane with from four to seven rays; body convex, and coloured above; flat and paler beneath; vent near the head. They swim constantly obliquely, and reside at the bottom of the water, from their wanting the air-bladder; they often bury themselves in the sand as far as the head, by which they escape the jaws of the more rapacious animals. Seventeen of the species have both eyes on the right side of the head, and twelve of the species have both eyes on the left side of the head. The following are the most worthy of notice:

The *Platessa*, or Plaise, with a smooth body, often varied with brown and cinereous, with orange spots; inhabits British and other European seas; grows to sixteen pounds weight; flesh good.

The *Hippoglossus*, or Holibut; body perfectly smooth; tail lunate; colour above, an obscure green, bordering on black; belly a pure white. This species is called Scotland turbot, although different from the fish known in England by that name. It is the largest of all the aquatic animals except the whale tribe: sometimes found on our shores, three hundred pounds weight; but in the seas of Iceland and Newfoundland, are much larger. In Greenland, they are caught with a hook and line, cut up into large slips, and dried for food. The holibut is common to the London market, but is deemed, except the part adhering to the side fins, an unsavoury fish.

The *Maximus*, or Turbot; body rough; the upper part cinereous, and

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chick-set with black spots. Skin without scales, but granulated. This species is excellent food, and grows to a great size, often weighing from twenty to thirty pounds. These fishes are most successfully caught by a hook and line. The turbot fishery is carried on to the greatest extent on the north coasts of England and Holland.

The *Solea*, or Sole; body oblong, narrow, rough; above olive; upper jaw longer. Inhabits the European and Mediterranean seas; sometimes above two feet long; flesh good, and, next to turbot, considered the most delicate of the whole tribe.

The *Flessus*, or Flounder, inhabits European seas, and even enters rivers, far above salt waters; seldom exceeds six pounds weight; body above pale brown, with dirty yellow spots, beneath white, shaded with brownish; flesh good.

The *Limanda*, or Dab, less and thinner than the flounder, inhabits European seas; body above dark liver-colour, beneath white; flesh good.

The *Lævis*, or Smear-dab, brown, with obscure yellow spots, beneath white, with five large dusky spots; inhabits Europe; one foot and a half long; flesh very good.

The *Rhombus*, or Pearl; body smooth, deep brown, with dirty yellow spots, beneath white; the broadest of its size, except the turbot; flesh very good.

The *Passer*, or Whiff, inhabits European seas; body smooth, oblong, above varied with cinereous and yellow, beneath white; hardly a foot long; flesh very good.

FLATTERY, is false praise; but when it is used by the flatterer to obtain some personal advantage to himself, it may be termed artful obsequiousness, whether in words or actions, or both. He who *flutters*, deals in exaggerations and falsehoods for the sake of pleasing those of whom he thinks meanly enough to imagine, that they will be gratified with praise which is not their due. He who has a just perception of human nature, will shrink

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from every species of compliment, but he should be induced to think of himself more highly than he ought; and the same perception will also make him cautious in his expressions of commendation relative to the conduct of others. Flattery, therefore, is at all times highly indecorous and improper.

FLATULENCY, a disease of the stomach and bowels, in which they are more or less distended with wind, accompanied with or without loss of appetite, acid risings in the throat, head-ach, costiveness, and a variety of other unpleasant symptoms.

Flatulency sometimes arises in healthy persons from improper food taken into the stomach; but it more frequently arises from a diseased state of the stomach itself, or from the stomach and bowels sympathising with, or partaking of the general debility which affects the whole body in a variety of diseases.

If the flatulency arise merely from improper food, in a healthy person, the best remedy is, an active purgative, such as half a fluidounce of tincture of rhubarb, or of senna; and sometimes a common carminative such as peppermint-water will remove the complaint. But in all flatulencies it is a much better way to remove them by evacuating the bowels than by any stimulants taken into the stomach. When the flatulency is in the bowels, the laxative clysters (see **CLYSTER**) will sometimes speedily remove it.

For the flatulency arising from poisons, see **POISON**, &c.

In the flatulencies arising from dyspepsia, and various other diseases, attention must be paid, not only to the kind of food taken into the stomach, but also to the particular disease with which the patient happens to be afflicted. See **ALIMENT**, **APPETITE**, **COLIC**, **COSTIVENESS**, **DISPERSA**, **HYPPOCHONDRIASIS**, &c.

FLAX, or *Linum*, a genus of plants consisting of twenty-eight species, some of which are found in every quarter of the globe; four in the dry pastures, mountains, or corn-fields of our own country. The following are the chief:

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The *Perenne*, or Siberian perennial flax, with ascending numerous stems; flowers in umbels, large, and of a blue colour. A native of England.

The *Catharticum*, Purging-flax, or mill mountain, an annual plant, with a forked stem, about five inches long. Found wild in the dry pastures, and on the chalky-hills of our own country. The dried plant has been occasionally used as a purgative; it may be given either in an infusion made with two drachms of the dried plant, and two fluidounces of boiling-water; or one drachm of the dried plant in powder, may be taken for one dose: but it possesses no particular advantages.

The *Usitatissimum*, or Common flax, is a plant too well known to need description.

The parts of this plant used in medicine are the bark, which is converted into the substance called *tow*; the seeds, and an expressed oil obtained from them. The bark, commonly called *flax*, is also used extensively for the manufacture of linen-cloth. See LINEN, CAMBRIC, &c.

Flax-seed, or Linseed, is emollient, and demulcent. The mucus obtained by infusion, is a cheap and useful demulcent in catarrh, pneumonia, diarrhoea, and dysentery; in visceral inflammation, calculous complaints, gonorrhoea, scalding of the urine, and during the exhibition of the oxymuriate of mercury. When the seeds are boiled in water, the mucus is obtained in union with a portion of the oil; and forms a useful local remedy, when given in the form of clyster, in abrasions of the intestines, and tenesmus, particularly in the advanced state of puerperal fever, when the offending matter in the bowels produces frequent and involuntary stools: but the portion thrown up should be small. The seeds ground into powder or meal, and simply mixed with boiling water, form an excellent poultice. An *infusion of linseed* is made with one ounce of the bruised seeds; liquorice root sliced, half an ounce; boiling water

two pints. Let them macerate for a quarter of an hour near the fire in a covered vessel, and strain. The dose is two fluidounces, frequently repeated.

The expressed oil is used for various purposes, not only in medicine (see BASILICON and BURNS) but also in the arts. The oil obtained without heat is that ordered by the faculty, but this direction is not often complied with, by those whose immediate business it is to supply it.

The cakes remaining after the oil is expressed from the seed, are used for the purpose of fattening cattle. See HUSBANDRY, LINSEED, and Ox.

The soils most suitable to the *cultivation* of flax, are the more deep and friable loamy kinds, and such as contain a large portion of vegetable mould in their composition. But it succeeds best upon a rich soil that has not been ploughed for some years, although the flax is in such soils *coarse*: perhaps, therefore, the best quality of flax will be obtained from a soil neither too rich nor too poor.

When the land is newly broken up from the state of sward, the first ploughing should be late in the autumn; and in every instance previously to sowing the seed, the time for which is, from about the beginning of March, to the middle of April, it should be made perfectly fine in the mould, by being repeatedly ploughed over, and broken down by harrowing; it should also be laid flat and even just before the season for sowing the seed.

Flax-crops are cultivated after most sorts of grain, as well as after different kinds of green crops, but it is said to succeed best, when put in after potatoes.

Care should be taken that the seed for sowing be quite ripe, which is known by its being bright and shining in its colour, oily in the feel, and weighty in the hand. The seed of home produce is sometimes used; but that from Holland, the Baltic, or America, is to be preferred: that of Holland is generally chosen. From two bushels to two bushels and a half

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per acre, are sufficient, when sown broadcast; and if by the drill method, and the distances of the rows apart be eighteen or twenty inches, less than one half of the quantity will be sufficient. In short, where the crop is intended for *seed*, in whatever way the sowing is performed, a much less proportion of seed should be employed than when the *flax* is the chief object. Although it is not a common practice to weed flax-crops which are sown broadcast, it will be found, however, often very advantageous to do so: and the drill-crops may be kept clean by the hand or horse-hoe. The weeding should be done as soon as the plants are about four inches in height.

Towards the latter end of July, or the beginning of August, the flax will begin to ripen; it should then be pulled up as soon as the heads begin to turn brown, and hang downwards, otherwise the seeds will soon scatter and be lost. If, however, the fine *quality* of the flax be the principal consideration, it ought to be pulled earlier; if the *seed*, it should be suffered to remain in the ground until it becomes perfectly ripe. Flax pulled in the bloom, proves whiter and stronger than if left standing till the seed is ripe; but then the seed will be lost.

In pulling, the flax is to be laid in small parcels upon the surface of the ground, in such a position that it may have the full benefit of the sun. It is then to be tied up and conveyed as soon as possible to the place of watering. Previously, however, to this operation, the seed is to be taken off by passing the stalks through iron combs, whose teeth are so closely set together, that the head cannot pass through; this is called *ripping*.

The watering, or *RETTING*, is generally effected by laying the flax in bundles in a pond of soft water, where it is pressed down by stones, or other heavy bodies. In the course of five or six days, or more, the bark, or skin, readily peels off from the stalk, the latter breaking as if rotten, and appearing of a deep yellow; and in this state

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it is fit for the next operation, called *breaking*, or *scutching*. But as this operation is commonly performed by persons who make it their peculiar business, we need not enlarge upon it here, further than to observe that many methods have been proposed for *dressing flax*; and that Messrs. HILL and BUNDY, obtained a patent for machinery, for the dry preparation of flax, a short time since, an account of which will be found in Nos. VIII. and IX. of the Journal of Science, edited at the Royal Institution; and in No. XI. of the same journal, are some explanatory remarks on the same subject, by PROFESSOR MILLINGTON.

Dew-retting, or spreading out the flax immediately after being pulled, thinly upon a grass field, where it is occasionally turned until the process of putrefaction has, in a more gradual manner, produced the separation of the flaxy material from the stalk, is occasionally practised instead of watering, but it is, upon the whole, a less desirable method.

The produce of *flax* is sometimes eight hundred weight, or more, per acre, but five or six hundred weight may be reckoned a medium crop. When *seed* is the object of the cultivator, the produce is from six to ten or twelve bushels per acre.

The water in which flax is steeped, if sprinkled on land will improve its fertility; but this water is so injurious to cattle, that macerating or steeping flax in any pond, or running stream, is, by 33rd of Hen. VIII. c. 17, prohibited under severe penalties.

Flax, toad. See SNAP-DRAGON.

FLEA, or *Pulex*, a genus of insects consisting of two species: the *irritans*, or Bed-flea, too well known to need description. The body is of a dark brown colour; it walks but little; by the elasticity of its legs, it springs above two hundred times the length of its own body. It deposits its eggs on blankets, or among the down of animals; they are round and smooth; and in four or five days give birth to minute *larvæ*, which feed on greasy fur.

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After having crept about for a few days, the larva spins a silken cord, in which it lies dormant for about a fortnight in its pupa state; after which it bursts from its confinement to the great annoyance of man, quadrupeds, and some birds.

Cleanliness is one of the best preventives of the increase of this troublesome insect, to which should be added *daily* inspection of the blankets of the bed. A decoction of wormwood sprinkled on the floor of the room, will, it is said, soon exterminate them. A bag filled with dry moss, the odour of which is, to them, extremely offensive, is the best remedy to expel them from bed-clothes. Most of the preparations of mercury destroy fleas as well as bugs. See BUG. The green leaves of alder, whilst the dew is on them, will also attract these animals, so that they may be easily killed.

The other species is the *penetrans*, Chigoe, or Chigger, inhabiting South America, and very troublesome in the sugar colonies, penetrating the skin of the inhabitants, where it lodges its eggs, and causes malignant and often fatal ulcers. The body of the female, when gravid, is swollen to nearly a hundred times its natural size.

FLEA-BANE, or *Conyza*, a genus of plants consisting of ninety-one species, scattered over the globe; the *squarrosa* is indigenous to our own country. But the whole genus is of little importance.

FLEA-LOCUST, FROG-HOPPER, or *cicada*, a genus of insects, consisting of many species, named chiefly from the trees which they infest. Their beak is infected, and they are provided with four wings. The *larvæ* of several of the species discharge considerable quantities of frothy matter on the branches, or leaves, of those trees on which they reside, to which they are highly detrimental. They should be destroyed, by being rubbed off with the hand, and the tree afterwards washed profusely with soft water.

Flea-wort. See PLANTAIN.

FLEAM, an instrument used to

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bleed cattle, which is placed on a vein and then driven by a blow. A case of fleams comprehends six sorts of instruments: two hooked ones, called drawers, used for cleaning wounds; a pen-knife; a sharp-pointed lancet, for making incisions; and two proper fleams, one sharp, and the other broad-pointed. These last are somewhat like the point of a lancet fixed in a flat handle, and no longer than is just necessary to open a vein.

FLEECE-HOSIERY, a very useful kind of manufacture for preserving the body warm. It consists in interweaving fine fleeces of wool into certain pieces of the common stocking texture. Stockings, socks, waistcoats, and other clothing, are made in this way; and are very useful for persons afflicted with various complaints, in which a preservation of the warmth of the body is necessary; and also for common use in cold climates.

FLESH, in anatomy, a fibrous, or muscular part of the animal body, soft and bloody, being that part of which most of the other parts are composed, and by which they are connected together. Muscular flesh is composed of a great number of fibres, or threads, commonly of a reddish or whitish colour. See FIBRIN. Muscles are composed chiefly of fibrin, to which they owe their structure and their form, and they also contain albumen, gelatine, extractive matter, phosphate of soda, phosphate of ammonia, and also phosphate and carbonate of lime.

When meat is boiled, it is obvious, that the gelatine, the extractive matter, and a portion of the salts, will be separated, while the albumen and fibrin will remain in a solid state: hence the flavour and the nourishing nature of soups, are derived from the extractive matter, and the gelatine. When meat is roasted on the other hand, all these substances continue in it: hence the superior nutritive properties of roasted meat to that which is boiled. See ALIMENT, BEEF, FOOD, &c.

FLINT, or *Pyromachus*, in mineralogy, a genus of siliceous earths, con-

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sisting principally of silica, with a small portion of alumine and oxide of iron, and frequently a little carbonate of lime. It is hard, semi-transparent, lightish, of a conchoidal texture, breaking into indeterminate, very acute-angled fragments.

Five species of flint have been pointed out : the *cinereus* or cinereous flint, found in Lusace, greyish, approaching to sub-opake, covered with a hard white crust ; the *striata*, white, found on the English chalk-hills ;—the *cretaceus*, or common flint, tinged semi-transparent, found in Britain, France, and other European countries, in detached pieces, of various sizes, covered with a white calcareous coat ; most common among chalk ; colour varying from honey-yellow to brownish black ; specific gravity from 2,580 to 2,630 ; contains silica 98, lime 50, alumine 25, oxyd of iron 25, water 1 ;—the *semipelucidus*, found in France and some other European countries ; colour white, reddish, blueish, &c. ;—the *crystallinus*, crystallized in a three-sided depressed prism : two varieties, one with a simple, the other with a double pyramid ; found in Saxony.

It has been assumed that the earth *silica* consists of a metallic basis, (to which the term *Silicium* has been given) united with oxygen, and that it contains 50 per cent. of each of its components.

Oxide of Silicium, Silica, or Siliceous earth, is a very abundant natural product. It exists pure in rock-crystal, and nearly pure in flint. The colour of silica is white ; its specific gravity is 2,66. It fuses at a very high temperature. In its ordinary state it is insoluble in water ; but under certain circumstances dissolves in very minute portions in that fluid, and also sparingly in the acids. It readily unites with the fixed alkalis, and forms glass ; or, if the alkali be in excess, a liquid solution of the earth may be obtained, which has been called *Liquor of flints*.

The uses of silica are numerous and important ; it forms one of the principal ingredients in pottery and porcelain,

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and, as before mentioned, with alkali it forms glass.

The fossils which consist of silica, pure, or nearly so, are the following : *Rock-crystal*, or *Quartz* ; found near Bristol, and in Cornwall ; they are sometimes called Bristol and Cornish diamonds ;—*Brown and yellow crystals of quartz*, found in Scotland ;—*Purple quartz*, or *Amethyst* ;—*Rose quartz* ;—*Prase*, or *Green quartz* ;—*Chrysoprase* ;—*Avanturine* ;—*Flint* ;—*Chalcedony* ;—*Cornelian* ;—*Onyx* ;—*Bloodstone* ;—*Agates* ;—*Opal* ;—*Menilite* ;—*Pitch-stone* ;—*Obsidian*, and the different kinds of *pumice*, contain a large portion of silica.

Flix-weed. See CRESS.

FLOOK, the fish called Flounder. See FLAT FISH.

FLOOR, in building, is the bottom of a room, or that part on which we walk.

Floors are made either of earth, mortar, bricks, stone, wood, &c. The best wood for flooring, because the most lasting, is oak, but as this soon becomes of a dark colour, red deal is generally preferred.

Earthen floors are commonly made of loam ; and sometimes, especially to make malt on, of lime and brook-sand, gun-dust, or apvil-dust from the forge. The following will perhaps make a floor equal to any which can be invented : Take two parts lime, to be afterwards slacked, one part coal-ashes, and one part fine gravel, or sand. These ingredients should be made into a stiff paste with water, and turned over every day for a fortnight, or even longer ; it will then be fit for use : it ought to be laid on five or six inches thick, and somewhat higher at the middle than at the sides. Ox-blood and fine clay, tempered together, will, it is said, make the finest floors in the world. The floors of the New Prison, at Dartmoor, are made of gypsum. In laying these floors, all, except the last, should be well beaten every day, till they are so dry that no impression can be made upon them.

Flounder. See FLAT-FISH.

FLOUR, the meal of wheat, rye, &c., finely ground and sifted.

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We have stated at large the constituents, and nutritive qualities of wheat-flour under the article BREAD, to which we therefore refer; but as every thing relative to food is important, we add here the following directions for ascertaining the purity of flour. Grasp it briskly in the hand, and squeeze it for half a minute, and if it be good it preserves the form of the cavity of the hand, although it may be rudely placed upon the table. Adulterated flour, on the contrary, soon falls down; that mixed with whiting is the most adhesive, though it soon gives way; but if the adulteration be ground stones, bones, or plaster of Paris, it almost immediately falls. Dip the fore-finger and thumb in a little sweet oil, and take up a small quantity of the flour between them; if it be pure it may be rubbed for any length of time and will not become adhesive; but if whiting be present it very speedily becomes putty, and adheres strongly; the pure flour becomes also of a very dark colour from the admixture with oil; adulterated flour is but little altered.—Lemon juice or vinegar will also shew the presence of whiting, by the agitation which it produces in the flour; pure flour produces no particular effect with these fluids.—The best kind of wheaten flour assumes, at the instant it is formed into a mass by the addition of water, a very gluey, ductile, and elastic paste, easy to be kneaded, and which may be elongated, flattened, and drawn in every direction without breaking.

It is not easy to devise means for the destruction of the insects which breed in flour: but all flour should be kept *thoroughly dry*, and in casks, in preference to sacks, where the method is practicable. Damaged flour, termed *sprit*, may, it said, be effectually divested of its disagreeable flavour, by mixing ground rice with it in the proportion of one pound to ten pounds of flour, and the usual quantity of yeast and water, keeping the mixture before the fire for the space of two hours, and then making it into bread in the usual way.

FLOWER, in botany, the organs

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of generation in vegetables, with their coverings. A flower, when complete, consists of a calyx, a stamen, and pistil; but the essential parts are the anther and stigma, which are sufficient to constitute a flower, either together, in hermaphrodite flowers, or separate, in male and female flowers.

The CULTURE of FLOWERS forms one of the most delightful and pleasing amusements which we know. We have, in different parts of our work, stated the best methods of cultivating various ornamental flowers. The reader who is desirous of further information relative to the flower-garden, will find more upon the subject under GARDENING, to which we refer, and also to the next article.

FLOWERS, PRESERVATION OF. The method of preserving flowers in their natural beauty throughout the year, has been much sought after. Some gather them when dry, and not too much opened, and bury them in dry sand; this preserves their figure, but takes off the liveliness of their colours, others gather them when not thoroughly open, in the middle of a dry day, and put them into a glazed earthen vessel, filling it with them up to the top; when full they are sprinkled over with some good French wine, with a little salt; they are then set in a cellar with the mouth of the pot tied down. They may be taken out at pleasure, and on setting them in the sun, or within reach of the fire, they will open as if growing naturally; and not only the colour but the odour is also preserved.

Roses, and other flowers whose fragrance only is wanted, and which is not injured by the flowers being bruised, are best preserved with salt. Roses, for example, if well rubbed or pounded with one-fourth of their weight of common salt, and placed in a jar, will retain their odour for years. From such roses almost all the rose-water sold in the shops is made; indeed, we believe the water distilled from salted roses is even more fragrant, it will certainly keep better, than that which is distilled from the fresh-blown rose.

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In drying flowers for specimens, it is scarcely possible to preserve the colours in any way : a method proposed by Sir ROBERT SOUTHWELL, as mentioned in the *Pantologia*, article Flowers, seems the best, but we have not room to detail it.

Another method is also proposed by the same author for preserving both flowers and fruit sound throughout the year ; it is this : Take of salt-petre one pound ; Armenian bole two pounds ; clean common sand three pounds. Mix all well together ; then gather fruit of any kind, not fully ripe, with the stalk to each ; put these one by one into a wide-mouthed glass, laying them in good order. Tie over the top with an oiled cloth, put them in a dry cellar, and set the whole upon a bed of the prepared matter, four inches thick, in a box ; then fill up the remainder of the box with the same preparation, and let it be four inches thick all over the top of the glass, and round its sides. Flowers are to be preserved in the same manner : and they may be taken up after a whole year, as plump and fair as when they were buried.

Flowers of Benjamin. See BENZOIN.

Flowers of Brimstone. See SULPHUR.

Flower de Luce. See IRIS.

Flowering Fern. See MOON-WORT.

FLUATE, in chemistry, a salt formed by the union of FLUORIC ACID (which see) with any alkaline or salifiable base.

Fluellin. See SNAP DRAGON.

FLUKE, GOURD-WORM, or *Fasciola*, a genus of the class worms. The body is flattish with an aperture or pore at the head, and generally another at a distance beneath ; seldom a single aperture. They are hermaphrodite, oviparous, and are generally found in the stomach, intestines, or liver of various animals. Many of this genus are similar in shape to the fish called flounder, or flouk, whence, no doubt, the present name. Forty-six species have been observed of this animal. They have been divided into five tribes :—those infesting mammiferous animals ;—birds ;—rep-

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tiles ;—fishes, and worms. The first tribe are found in man, the fox, pole-cat, badger, long-eared bat, sheep, swine, deer, horse, and stag ;—the second in the eagle, buzzard, kite, duck, crane, goose, and bittern ;—the third in the salamander and frog ; the fourth in the eel, whiting, haddock, blenny, father-lasher, plaise, perch, salmon, trout, pike, and bream ; and the fifth in the cuttle fish. The most common species is the *hepatica*, or liver-fluke, inhabiting the liver of sheep, which often vomits it up ; generally found fixed by a pore at the extremity, and another in the middle of the abdomen ; and occasions, or is produced by dropsy, and the disorder called the rot. The body is about an inch long, broader in the fore part, and terminated by a tube ; the back marked with about eight longitudinal furrows, in two series. See ROT.

FLUOR ALBUS, *Leucorrhœa*, or WHITES, is a disease of the womb, or its contiguous parts, from which a pale-coloured greenish or yellow fluid is discharged, attended with loss of strength, pain in the loins, dyspepsia, and a wan sickly aspect.

Weakly women, of lax solids, who have had many children, and long laboured under, ill-health, are the most subject to this disagreeable disease ; from which they unfortunately suffer more severe penance than others, as the nicest sensations are often connected with such a delicacy of bodily frame as subjects them to it : females of all ages and conditions are, however, liable to it. It is sometimes a local disease, but more commonly arises from a debility of the whole system ; and it is sometimes occasioned by the use of *pessaries*.

When this discharge appears about the age of thirteen or fourteen, and returns once a month, with symptoms like those of the menses, it may be deemed strictly natural, and in such case ought not to be stopped. If it arise from general debility, the discharge being generally mild, it may be safely taken away, and for this purpose nourishing food, beef-tea, &c., will be necessary. An infusion of chamomile flowers, taken

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daily, will also be beneficial ; and country air, and gentle exercise on horse-back, may be advantageously employed. An injection made of green tea, or pure smith's forge water, or the following, may be injected, with a womb-syringe, twice a day : Take of balsam of capivi half a fluidounce ; of mucilage of gum-Arabic one fluidounce ; of spring water six fluidounces and a half, mix them together for an injection.

Where the womb only is affected, in consequence of hard labour, frequent miscarriages, a suppression, or immoderate quantity of the menses, or a sprain of the back or loins, the discharge is often of a reddish colour, like that from old ulcerous sores, being sometimes so sharp as to excoriate the contiguous parts, and to occasion a smarting and heat of urine. Sometimes a deep-seated darting pain, with a forcing down, attend such a discharge ; this is a very dangerous and alarming sign, and indicates an ulceration, or cancerous state of the womb. This malignant state of the disease, if of long continuance, is extremely difficult of cure, and disposes the patient to barrenness, a bearing down, dropsy, or consumption. In this case no female should delay a moment, to obtain the best medical advice.

This complaint may sometimes be mistaken for *virulent gonorrhœa* ; it should therefore be most carefully distinguished from it. A fresh infection from gonorrhœa is malignant and inflammatory, and suddenly appears without any evident cause ; it proceeds also from the urinary passages chiefly, and continues whilst the menses flow ; an itching inflammation and heat of urine, with frequent irritation to make water, the orifice of the urinary passage being prominent and painful, are also forerunners of the discharge. In *fluor albus* the discharge is supplied from the cavity of the womb, and its passage, and the menses are seldom regular ; the discharge is also accompanied with pain in the loins and loss of strength ; and if any inflammation or heat of urine follow, it is in a less degree, and that only

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after a long continuance of the discharge. In gonorrhœa the discharge is greenish or yellow, less in quantity, and not attended with the same symptoms of weakness. In the *fluor albus* it is also of the same colour, especially in bad habits of body, and after long continuance ; but it is usually more offensive, and redundant in quantity.

FLUOR-SPAR, FLUATE OF LIME, or Fluor. These terms have been applied to a body containing a peculiar principle, which has not been hitherto obtained in an insulated state. Sir Humphry Davy calls it **FLUORINE**.

Fluor-spar is a mineral found in many parts of the world, but in great beauty and abundance in England, and especially in Derbyshire. Here it is commonly called Derbyshire-spar, or, by the miners of that county, *blue John*. It is usually found in cubic crystals, which may be easily cleaved into octoëdra, its primitive form. Its colours are extremely various. Its specific gravity 3. In Derbyshire it is found in detached masses, from an inch to more than a foot in thickness. It is the only variety which affords the beautiful vases, and other ornamental articles. *Compact fluor* is a scarce variety : the finest specimens come from the Hartz. A third variety is *chlorophane*, so called from the beautiful pale green light which it exhibits when heated. The nature of the colouring matter of fluor-spar is not exactly understood. It is liable to fade ; the blue varieties become red and brown, by heat. See the next article.

FLUORIC, or HYDROFLUORIC ACID, is procured by distilling a mixture of one part of the purest fluor-spar in fine powder, with two of sulphuric acid ; the distillatory apparatus should be of lead, or silver ; the heat required is not considerable ; sulphate of lime remains in the retort, and a highly acrid and corrosive liquid passes over, which requires the assistance of ice for its condensation : this liquid is the Fluoric-acid. It is colourless, of a very pungent smell, and extremely destructive. If applied to

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the skin, it instantly kills the part, produces extreme pain, and extensive ulceration. At 80° it becomes gaseous; it has never been frozen; and it produces white fumes when exposed to a moist air. This acid acts upon potassium, sodium, and some other metals, with great energy. It also dissolves glass, and hence it can neither be received nor retained in glass vessels.

The only use to which this acid has been applied, is engraving on glass. This is best effected by tracing the design upon glass prepared with engraving wax, as in common etching; and afterwards laying the plate with the engraved side downwards in a box lined with strong sheet-lead, or thick tin-foil, placing at the bottom of the box a few leaden cups, containing a mixture of one part of very finely pulverized fluor-spar, and two parts of sulphuric acid. The lid of the box, is then to be closed, and the box to be placed on a stove, or any other convenient situation, where it may be exposed to as high a heat as it can bear, without the risk of melting the wax: fluoric acid gas will be copiously disengaged, and in the course of from one to three hours, according to circumstances, the plate will be sufficiently corroded.

Flute. See WIND-INSTRUMENTS.

Flux in medicine. See DYSENTERY.

FLUX, in chemistry, any substance which is added to another to assist its fusion, when heat is applied. But the term flux is almost exclusively applied to those substances, often saline mixtures, which are added to minerals or metallic ores, to assist in the process of their reduction to the metallic state.

White flux, is made simply by mixing equal parts of tartar, or cream of tartar and nitre, and deflagrating them in a clean crucible.

The *Black flux*, is an extremely useful compound for effecting the reduction of many metallic oxides. It is made thus: Take one part of nitre, and two parts of tartar, each in powder; let them be well mixed, and thrown, by small quantities at a time, into a large crucible, made red-hot, and loosely

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covered after each projection. As soon as the last portion is deflagrated, it should be removed from the fire, and kept in well-closed bottles, to prevent its liquifying by the access of air.

Common borax, soda, charcoal, and limestone, are also, upon some occasions, useful fluxes.

FLY, or *Musca*, a genus of insects consisting of five hundred and twenty known species, scattered over the globe, of which a hundred are common to our own country. But it is probable that the number of unknown species is much greater than the known. England, however, is far from being a country most productive of this insect. The south of Europe abounds with a much greater variety of species than the north; and all hot climates than cold. In hot climates, indeed, they multiply to a degree almost intolerable, and are incalculably mischievous both to animal and vegetable foods. They are extremely diversified in their external form, their structure, their organization, their metamorphosis, their manner of propagating their species, and in providing for their posterity. The following are some of the most interesting to Europeans:

The *Domestica*, or House-fly. Thorax brown, with four occult dark lines; abdomen orange-brown, with a few black spots. Seldom makes its appearance before July.

The *Vespæ similis*, or Wasp-fly, entirely resembles the animal whose name it bears.

The *Pellucens*, or Transparent-fly.

The *Carnaria*, or Flesh-fly; hairy, black. Inhabits Europe; lives on putrid, and other animal food, on which it deposits its whitish, oblong, eggs. The larvæ, or maggots, hatch in the space of a few hours, become full grown in eight or ten days, and are then of a yellowish-white colour. When the larva changes to a chrysalis, the whole assumes an oval form, and a reddish colour. In ten days more, the fly itself emerges in a perfect state.

The *Flava*, is yellow, with bright gold, or green eyes. One of the small-

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lest, but most elegant of the European tribes.

The *Vomitaria*, or Blow-fly ; thorax black ; abdomen shining blue. This also frequents putrid meat, and is hatched in the same manner as the *carnaria*.

The *Chamæleon*, abdomen black, with yellow spots on each side. Inhabits England, and Europe generally, near fresh waters.

Flies may be effectually destroyed by a weak solution of arsenic in water, to which a little sugar may be added ; care being taken that this dangerous solution is effectually guarded from the access of children, or other possibility of mischief. We doubt, however, whether the annoyance of these animals be not increased by such means, as such sweetened liquors attract them in great numbers.

It is said that two drachms of extract of the wood of quassia, dissolved in half a pint of boiling-water, and sweetened with sugar, forms a liquor as fatal to flies as a solution of arsenic, to which, of course, in such case, it is much to be preferred.

Fumigations with tobacco-smoke, will also drive flies away, or destroy them.

Many flies are injurious to corn. The mischiefs arising from the *Dolphin*, or black fly, which attacks the tops of beans, are best prevented by cutting off the tops, on the very first appearance of the fly, otherwise little good will be obtained. The ravages of the *Corn*, or *Hessian-fly*, can only be prevented by promoting the vigorous growth of the plants, by properly manuring and cultivating the soil. And those of the *turnip-fly*, which attacks the plant immediately after the seed-leaf appears above the ground, are best prevented by sprinkling freely, slacked lime in powder, over the whole field, and especially upon the plants themselves. Indeed, slacked lime appears to be the best and cheapest remedy for every species of fly which attacks plants.

The FLY in SHEEP, is an annoy-

ance to which they are constantly exposed in hot seasons, especially in enclosed, woody districts, and when they are laden with wool. The most effectual remedy with the least injury to the wool is, the flowers of sulphur, mixed with any common fish-oil, to the consistence of a paste, and drawn thinly over the wool by the hand. When maggots are formed, instead of cutting off the wool, and scraping off the animals from the part affected, the common, and, certainly most effectual practice, it has been advised that the wool should be parted, and the maggots picked out with a knife, or otherwise dislodged, without breaking the coat ; and that a quantity of white-lead should be scraped from a lump, among the wool, which being agitated, the powder is carried evenly down to the wound. Too much discolours the wool ; a little prevents any further harm from the maggots which may be left among the wool ; drives them away from the wound, and at the same time promotes its healing. If, however, the maggots of the fly have eaten through the skin of the sheep, which they sometimes will, and even penetrate into the body of the animal, the immediate neighbourhood of the wound must be cleared from the wool ; and the best application then is *green basilicon*, thickly smeared over, and around the wound.

Fly, the Catch. See LYCHNIS.

FLY, the SPANISH, BLISTERING-FLY, *Cantharis*, or *Lytta vesicatoria*, one of the species of the genus *Lytta*, of which thirty-two have been described ; they are all exotics, but scattered over the globe. Many of these, dried and reduced to powder, are capable of raising blisters on the surface of the body. The most curious and valuable in this respect, is the first-named species, the Spanish-fly.

This insect is found on the privet, ash, elder, lilac, and the tartarian honey-suckle, in Spain, Italy, France, and, to a certain extent, over all Europe. It is two-thirds of an inch in length, and one-fourth of an inch in

FLY, the SPANISH

breadth, oblong, and of a green, gold, shining colour. When alive they have a fetid odour, and when dried and powdered, their smell is peculiar and disagreeable. They are gathered by smoking the trees on which they are found with brimstone, and catching them on a cloth spread underneath. They are sometimes simply shaken from the trees, and killed by the steam of boiling vinegar, then dried by the sun, or in a stove. They are imported into this country from Sicily, but chiefly from Astracan. The best are of a lively fresh colour, a small size, and not mouldy, nor mixed with the *melolontha vitis*, an insect resembling them but possessing no vesicating property; it may be distinguished from them by its square form, and by its black feet. If the blistering flies have been properly dried, and are kept in a well-stopped glass bottle, they retain their blistering property for a long time. They soon putrify when kept in a damp place.

Blistering-flies when applied to the skin, act as a local stimulant, first reddening and inflaming the part, and afterwards elevate the cuticle, by exciting a copious discharge of serum under it. These effects they produce more certainly than any acrid vegetable; and are therefore more generally employed for raising blisters, than any other substance. See **BLISTER**, **BLISTER PERPETUAL**, and **BLISTER-PLASTER**.

Blistering-flies have been occasionally given internally in dropsy, obstinate gleet, leucorrhœa, and incontinence of urine, arising from paralysis of the sphincter of the bladder. The free use of deluents, such as milk, almond emulsion, and mucilaginous solutions, is absolutely necessary during their use, to moderate their action. A *tincture* made with three drachms of the bruised flies, in two pints of proof spirits, macerated for fourteen days and filtered, is the best method of taking them internally. The dose is from ten drops to half a fluidrachm, in some demulcent infusion. As an external application, the tincture may also be efficaciously

employed, in conjunction with soap, or camphor liniment, as an embrocation against rheumatic pains.

The dose of these flies, when given internally, is from one grain to three. But, however, they are too dangerous a drug to be given internally by those not well acquainted with medicine, and the domestic prescriber should, therefore, not meddle with them.

Spanish flies taken improperly, often give rise to serious accidents, which may be followed by death.

The symptoms of their having been taken are, an extremely disagreeable odour, acrid taste, burning heat in the stomach, and other parts; frequent vomiting, often tinged with blood; copious evacuations, more or less bloody. In men, priapism to an excessive degree, and very painful; great heat in the bladder, and difficulty of making water; the urine often bloody, and sometimes totally suppressed; pulse frequent and hard; in some circumstances it is impossible to swallow; and sometimes frightful convulsions, delirium, and death. Hence the dangers which may ensue from their employment to excite the organs of generation, whether enfeebled by age, disease, or debauch.

For the cure, a large glass-full of oil is to be taken immediately, to favour vomiting; or, instead of this, several glasses of milk, sugar and water, or water only, may be given; or decoctions of linseed, or mallows; and then, according to the symptoms, the after treatment, as mentioned under the article **AQUA-FORTIS**, is to be followed. Independently of these means, one or other of the liquids above mentioned, should be injected into the bladder, to prevent or remedy the inflammation. If in spite of these measures, the difficulty of urine continues, the legs and thighs should be rubbed with two ounces of oil, in which a quarter of an ounce of camphor has been dissolved. Eight or ten grains of camphor may also be given internally: this may be mixed by means of the yolk of an egg.

If the symptoms are the effect of the

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external use of the flies, vomiting is not to be excited ; but the patient should be placed in a warm bath, and a quarter of a pint of sugar and water should be given every five minutes ; and the frictions, advised above, are to be employed ; and if there be great pain in the bladder, or stomach, we must not hesitate to apply twelve or fifteen leeches upon the seat of the pain, and to bathe the parts with cloths steeped in the decoction of linseed or mallows.

FLYING-FISH, or *Exocætus*, a genus of fishes, consisting of three species, having the mouth without teeth, the body whitish, the belly angular, and the pectoral fins very large and long, by which it can raise itself out of the water, suspend itself in the air, and fly forwards to some distance, till the fins become dry.

The *Volans*, inhabiting the European, American, and Red seas, and sometimes our coasts, but chiefly found between the tropics, is the principal species. There is, however, a variety of these, incapable of flight. It is the food of sharks, dolphins, and other predatory fish ; and, when in the air, of the pelican, eagle, and albatross.

The *Evolans*, is found in the Spanish seas.

The *Exiliens*, inhabits the seas of Carolina, and is larger than the volans.

Foul. See COIT and HORSE.

FODDER, dry food stored up for cattle against winter. See HAY, STRAW, &c.

Fetus. See FETUS.

FOG, or MIST, a sort of cloud floating on the surface of the earth, and through which the rays of light cannot readily penetrate.

Fogs appear to be often injurious to vegetables, the cause of which is not with certainty known. The diseases of grain are often occasioned by thick gloomy weather, more especially if it happen when the corn is at the height of its vegetation. This is particularly the case in regard to wheat, which, though it grows in a great extent of latitude, requires the rays of the sun to

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preserve it in a healthy state, and to bring it to maturity.

We do not know, and therefore cannot prescribe, a remedy for the mischiefs occasioned to vegetables by fogs.

Fogs are also often injurious to human health. Those arising from swampy soils, and those sometimes occurring in populous cities, are the worst. The best remedy for these is to quit the place, till the purity of the atmosphere is restored ; or if this cannot be complied with, large rooms, with good fires, and little exposure to the fog, promise the best remedy for those oppressive affections of the respiration, with which, in foggy weather, many persons are afflicted.

FOLDING of SHEEP, in agriculture, is a practice that has been much controverted. A most useful plan has, however, recently been adopted : namely, that of folding sheep upon straw in the corner of the turnip-field, and carrying the turnips to them. This plan is particularly suitable for such soils as are too wet, or too tenacious to have turnips fed upon them, or on a sloping ground, where the manure might be washed down. But, perhaps, the business of folding in winter, might be best conducted in well-littered yards.

Wherever the folding on the food to be eaten is adopted, it should be pursued with steadiness, and be done in a perfect manner ; for which purpose, it may be sufficient to allow two square yards, in many cases, a less space, to each sheep, leaving them to remain two nights or more on the same spot, although the usual practice is, to let them have more room, and to remain a less time on the land.

One advantage of folding is, that the wildest sheep are rendered more docile, and they feed better, and more quickly, during the time they are preparing for market.

Foliating of Looking-glasses. See LOCKING-GLASS.

FOMENTATION, a sort of partial bathing, performed by applying warm or hot liquids, or medicated decoctions, by means of flannel or other

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cloths, to various parts of the human body. Fomentations are generally applied as warm as the patient can bear them. Two pieces of flannel are best for the purpose, one to remain in the liquid, whilst the other is wrung and applied to the part ; as soon as the first begins to grow cool, it should be removed and the other instantly substituted. The continuance of the operation must depend upon a variety of circumstances, and the nature of the complaint : fifteen or twenty minutes, will, in general, be sufficient ; and it may be repeated every hour, or less frequently. The design of fomentations may, in general, be answered by immersion of the flannels in warm water alone, unless discutients, or antiseptics, are required.

FONTANELS, or FONTANELLÆ, in anatomy, certain small soft spaces in the skulls of infants, which are devoid of bone. The parietal bones and the frontal bones, do not unite until the third year, so that before this period, there is an obvious interstice, commonly called *mould*, and scientifically the *fontanel*. There is also a lesser space, occasionally, between the occipital and parietal bones, termed the *posterior fontanel*. These separations of the bones appear to be wisely designed in order that, at the birth, the head of the child may bear compression without injury. The fontanels continuing long open is a sure indication of disease : in rickety children this symptom of debility is generally very conspicuous.

FOOD, the substances eaten by animals to sustain the body : we shall here treat only of the food of man.

A knowledge of the proper kinds of food for the support of the human body in the best health should, if possible, be acquired by every human being, since individual health is necessarily an important object, and without which every other earthly good soon ceases to be a blessing. We are aware that this is a truism which scarcely needs to be stated, and to which most of our readers will readily assent, and that the important question, *how is such knowledge to be attained ?* remains to be answered.

It shall be our business, in the present article, to furnish the outlines, at least, of a reply.

The human body is of a very compound nature ; but the greater part of it consists of water, and certain substances to which chemists have given the names of *fibrin, albumen, gelatine, mucus, animal oil, or fat, and osmazome*, a peculiar substance of an aromatic flavour ; the bones, after being divested of their fat, gelatine, and albumen, consist principally of phosphate of lime : besides these, some other principles enter into the composition of our bodies, though in comparatively small proportions. All the elementary matters of which these principles consist, are continually discharged by the various excretions : by the lungs, by the skin, by the urine, and by the alvine evacuation ; but generally, in states of combination different from those in which they existed as part of the body. There is, therefore, a constant waste of carbon, azote, hydrogen, oxygen, phosphorus and lime, going on, which, in order to keep the body alive, and in health, must be as constantly replaced. There are only two sources from which this waste can be supplied : the atmosphere in which we live, and the aliment which we introduce into the stomach. The atmosphere consists principally of oxygen and azote, and it is doubtful whether any part of either be absorbed, or converted into a part of our bodies. The materials, therefore, to supply the waste of the body must be derived from the matters introduced into the stomach ; and those which are calculated to restore any of the deficient elements, or principles, are those alone which are alimentary. It is not, however, necessary that these elements should be in the same state of combination as those were whose loss they are to supply ; it is sufficient that the elements are there : it is the very essence of the function of digestion, to form other combinations from those principles, or to decompose those already formed. From this view of the human body, it is evident that, animal are more digestible than vege-

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table substances ; or, in other words, a larger proportion of a given quantity of animal food can be assimilated with the human body, than the same proportion of vegetable food, and hence the superiority of animal over vegetable matter, for our nutrition and support.

It appears, then, that the mineral kingdom furnishes water and lime ; that the vegetable, in addition to a small quantity of these, yields much carbon and hydrogen ; and that the animal kingdom, in addition to a proportion of all the preceding elements, furnishes almost all the azote which enters into our composition.

In various articles of our work, such as **ALIMENT, APPETITE, DIET, &c.**, we have considered what food is best to be taken into the stomach, in a state of the body more or less diseased, but here it becomes necessary to consider the food as being taken into the stomach in a state of health. In this place, therefore, we cannot but observe the great range in regard to food, in which persons in good health can with impunity indulge. Whilst hot rolls, fried bacon, and a variety of other dishes are avoided by the dyspeptic, a person in high health, will devour them, not only with a relish, but with as great advantage to the support of his body, as viands which supply, apparently, more effectually the waste.

Not only must this consideration be taken into the account, relative to food for the healthy, but *habit* also is known to be of very great importance. Two inhabitants of Nova Zembla were brought to Copenhagen, a few years since, and they pined for want, till they met with some train-oil, which they drank, it is said, with the same relish as we drink wine. And it is also well known that many persons who have been long accustomed to the plain and frugal fare of a country life, dislike, and even become diseased by adopting, the mode of living pursued in towns. And although our own experience is decidedly in favour of the nutritive qualities of animal muscle, beyond those of fat, yet, it is well known, a vast num-

ber of the labouring classes in this country, live almost solely upon potatoes and animal fat. Indeed, it has been concluded, from some experiments which have been made, that three ounces of boiled fat beef, are equally as nutritive as one pound of lean ; (see Sinclair's Code of Agriculture, page 91,) and if so, relative to food, digestion, and nutrition, we have yet a vast deal to learn. We conclude, however, that such food must be principally suitable to the labouring classes ; and to these, bacon, salt-beef, salt-pork, &c., prove not only wholesome, but nutritious dishes.

The question as to the difference between the nutritive qualities of animal and vegetable food, we presume to be decided ; although we find instances, occasionally, of persons living wholly upon vegetable food, and who drink nothing but water ; yet, such persons will not be found hard labourers. We scarcely think it possible for any person, with European habits, to live upon vegetables and water alone, to use much muscular exercise, and to enjoy, at the same time, good health.

The choice of food, therefore, for persons in health, it is evident, is various and great. He who lives in the country, and whose occupation is of an active kind, may take, and indeed requires, large quantities, of either fish, flesh, and vegetables, in almost any way which he may choose ; the citizen will find himself, even although in health, more restricted in this respect ; and the valetudinarian, when he sits down to his food, ought to have the dissyllable **BEWARE**, constantly before him.

In concluding this article, we would remind the healthy, that although they have a great range relative to food, they must not forget that it is still *limited* ; and that a timely attention to many unpleasant indications, such as head-ach, acidity in the stomach, and costiveness, will often remove, in the first instance, a predisposition to disease which, if neglected, sometimes, no after treatment can cure.

Food is not only often improperly

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prepared, and thus rendered unwholesome; but it is also frequently adulterated, and in such a way that the detection of the fraud is difficult, and sometimes impossible. Under the heads **BREAD, BREWING, COFFEE, &c.** many observations relative to this subject will be found: those of our readers who are desirous of further information, may consult a *Treatise on Adulterations of Food*, by Mr. ACCUM.

For the nutritive qualities of different food, see **ALIMENT**; see also **BREAKFAST, DIGESTION, DINNER, and DRINK.**

For the different articles of food, see them under the heads **BREAD, BEEF, CABBAGE, &c.**

FOOL'S PARSLEY, *LESSER HEMLOCK*, or *Æthusa*, a genus of plants consisting of three species, of which the *cynapium* is indigenous to our own cornfields. This noxious weed greatly resembles the common parsley, for which it is sometimes mistaken; but may be easily distinguished by its glossy surface, and total want of smell. When eaten among other plants it occasions vomiting, colic, and other painful symptoms.

FOOT, that part of the body on which we stand and walk.

The feet are subject to various diseases, the principal of which are **CHILBLAINS** and **CORNS**, for the treatment of which we refer to the respective articles.

The best method of treating *blisters of the feet* which arise from unusual or excessive walking, is to pass a needle, armed with white worsted, through them in the most depending parts, and letting the worsted remain in the blister, with the ends hanging a little out at each of the holes through which the needle passes, avoiding any other puncture of the skin; the fluid collected will gradually ooze out, and the blister be healed without the least pain.

Persons who desire to be easy and comfortable in their feet, should take care to have easy and soft shoes and boots; to bathe them occasionally in luke-warm water, or at most in water not

hotter than 98 degrees of heat; and to wear in the winter season *worsted* stockings, by which they will be kept warmer, and be less liable to chilblains. The same rules apply equally to children as to adults.

FOOT-ROT, a disease of the foot to which sheep are liable; it is a species of mortification, and is supposed to be contagious. It is known by their lameness, and an oozing of moisture between the claws, with a highly disagreeable smell; as the disease advances, it gets under the hoof, throwing out proud flesh.

The cure consists in paring and cleaning out the part down to the quick; the sheep should be also, if possible, removed from the rest of the flock, and the following solution dropped on the part: Take of sulphate of copper, and roch alum, of each two ounces; of powdered verdigris one ounce; of corrosive sublimate a quarter of an ounce; let the whole be dissolved in a quart of vinegar.

When the ulceration penetrates under the horn, that which covers the diseased part must be completely pared away with a sharp knife, and in slight cases, the above solution applied twice a day, will generally answer the purpose; in more inveterate cases a mixture of one ounce of verdigris powder, two ounces of nitric acid, and four ounces of water, will be necessary.

The following is, however, we believe, superior to any of the above applications; we have known it used extensively with great success; one application, after the mortified parts are properly pared away, will be in general sufficient. Take of sulphate of copper, and gunpowder, of each equal parts; rub them together in a mortar into a fine powder, and make them into a paste, or ointment, with linseed oil.

The cleaned parts of the foot should be thickly daubed with this preparation; and it is of great importance that the sheep should be kept from motion as much as possible, and in a dry place, for an hour or two after it is applied. The principal reason why this is more

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effectual than the liquids, is, we apprehend, because it remains longer upon the part.

FORCIBLE MARRIAGE. If any person shall take away any woman having lands or goods, or who is heir apparent to her ancestors, by force, and against her will, and afterwards she be married to him, or to another by his procurement ; or defiled ; he, and also the procurers, and receivers of such a woman, shall be adjudged principal felons. And by 39 Eliz. c. 9, the benefit of clergy is taken away from the principals, procurers, and accessaries before. And by 4 and 5 Phil. and Mary, c. 8, if any person shall take, or convey away, any unmarried woman, under the age of sixteen, though not attended with force, he shall be imprisoned two years, or fined at the discretion of the court ; and if he deflower her, or contract matrimony with her without the consent of her parent or guardian, he shall be imprisoned five years, or fined in like manner. And the marriage of any person under the age of twenty-one, by licence, without such consent, is void.

FORCING, in gardening, the art of raising and producing plants, flowers, and fruits, by means of artificial heat. It is accomplished either by the gentle moist heat that is evolved during the fermentation and decomposition of stable dung, tanner's bark, and other similar materials, or by the use of actual fire-stoves, flues, and other contrivances for the purpose. See **CUCUMBER**, **HOT-BED**, and **HOT-HOUSE**.

FOREIGNER, a person who comes from, and is a native of, another country.

It is to be lamented that difference of language, habits, and manners, should operate, as they too often do, to the estrangement of man from man. It ought to be the business of education to counteract, or to destroy this improper disposition of the mind ; for, in truth, all mankind have but one interest, and that is the general welfare and happiness of all.

FOREST, a huge wood ; or a large extent of ground, covered with trees.

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Forests have gradually diminished in this country ; and although the Society of Arts are annually giving premiums for the planting of forest trees, it may be much doubted, except they are planted upon lands otherwise useless, whether such plantations be a national benefit. Where, indeed, the soil can be converted to no other purpose, the planting of forest trees is exceedingly laudable, and cannot be too much encouraged.

The trees which answer best for such plantations, are those which grow to a large size, and lofty height, whether deciduous or ever-green ; the oak, ash, elm, beech, chesnut, maple, birch, poplar, larch, and pine, are the chief. Many of these are as ornamental as they are useful ; and where ornament is principally the object, they may be intermixed with mountain-ash, lime, horse-chesnut, willow, and all the varieties of fir, box, holly, yew, cypress and cedar.

In forming such plantations care should be taken to adapt the trees to the soil : thus the oak, elm, maple, and birch, answer well in all the deeper kinds of soil, while those of the ash, beech, chesnut, mountain-ash, larch, pine, box, holly, and yew, thrive best where the soil is light, dry, and friable ; whereas alder, willow, and poplar, require a considerable degree of moisture.

FORGERY, a crime, which, in consequence of the extensive circulation of Bank of England, and other paper money, is become very frequent in this country. It consists in counterfeiting the signature of another, with intent to defraud, and it is, by the laws of this country, a capital felony.

Various plans have been suggested for the prevention or detection of the forgery of Bank of England and other notes ; but as yet none have been adopted which are effectual. That proposed by PERKINS and FAIRMAN appears to be the best, and will, we suppose, be ultimately adopted by the Bank of England, as well as by our provincial banks.

It is to be lamented that the frequent executions for this crime do not appear to have lessened the number of crimi-

nals; and it is also to be lamented that those who have the making of our laws, do not perceive the inefficacy of excessive punishment as a means of reform. See PUNISHMENT.

FORMA PAUPERIS, an expression used in law, when a person has just cause of suit, but is so poor that he cannot defray the usual charges of suing at law or equity; in which case, on making oath that he is not worth 5*l.* in the world, on all his debts being paid, and producing a certificate from some lawyer that he has good cause of suit, the judge will admit him to sue in *forma pauperis*; that is, without paying any fee to counsellors, attorneys, or clerks. The statute 11 Hen. VIII. c. 12, having enacted that counsel and attorneys, &c. shall be assigned to such poor persons gratis. Where it appears that any pauper has sold or contracted for the benefit of his suit, whilst it is depending in court, such cause shall be thenceforth totally dismissed; a person suing in *forma pauperis*, shall not have a new trial granted him, but is to acquiesce in the judgment of the court.

Formic Acid. See ANTS.

FORTITUDE, a virtue, or quality of the mind, sometimes considered the same as courage. Courage, as well as fortitude, consists in strength of mind; but courage is an active, fortitude a passive quality. Fortitude consists chiefly in bearing the ills of life with dignified calmness, composure, and resignation, without despair; courage, in repelling the aggressions made upon our peace: courage supposes generally an activity of operation, either of mind or body, or both; fortitude, an endurance of the issue of events unmoved, or at least so far unmoved that the pleasure of our existence, although disturbed, is not destroyed. See COURAGE.

FOSSIL, any thing which is dug out of the earth. Fossils have been divided into three classes; those naturally simple, as earths, amber, sulphur, &c.;—those naturally compound, but unmetallic, such as several kinds of stones, gems, &c.;—and those comprehending all metallic ores.

Extraneous fossils, are bodies of the vegetable or animal kingdom, accidentally buried in the earth. See BITUMENS, METALS, and MINERALOGY.

FOUL IN THE FOOT, a disease incident to horned cattle, which resembles the foot-rot in sheep. If it be caused by gravel, or other hard matter, getting between the claws, after washing the part, the application of some emollient ointment will soon remove any inflammation which it may have produced; but if the inflammation run high, a poultice of linseed-meal and bran may be applied. If the beast is feverish, bleeding will be proper; if costive, a laxative drench. If ulceration occurs after the inflammation has been subdued, an astringent wash of alum, white vitriol, or acetate of lead, may be applied; and, if these fail, apply a solution of sulphate of copper. If it degenerates into, or appear at first, a foul, spreading sore, discharging stinking matter, some caustic preparation will be most effectual; not omitting to pare away freely any horny part of the hoof under which the disease may have spread; and to keep the parts free from dirt and moisture.

The disease appears to be local, and bleeding and purging can only be required when the pain and inflammation have brought on symptomatic fever, attended with costiveness.

FOUNDATION, in building, that part of the edifice which is under ground. In constructing foundations, care should be taken that the bottom of the trench consists of the same solidity throughout; and, unless the substratum be solid rock, it should be also equally level; that the lowest ledge or row be all of stones, laid close together; that the breadth of the ground-work be nine inches more than the wall intended to be raised on it, subject, however, to a discretion in this respect, depending upon the goodness of the ground, and the size of the walls; the foundation should also somewhat diminish as it rises, care being taken that it does so equally on both sides; and lastly, that no building ought to be laid on an old

FOX-GLOVE

foundation without a perfect assurance that it is of a proper depth and goodness.

FOUNDER, a disease to which horses are liable. It has been generally described by farriers as of two kinds, the *foot-founder*, and the *body-founder*. Both these complaints are treated of under the article **CHILL**, which see.

Fowl. See **POULTRY**.

Fox. See **DOG**.

FOX-GLOVE, or *digitalis*, a genus of plants consisting of four species, chiefly natives of the south of Europe, one, the *purpurea*, common to our own country.

The *Digitalis purpurea*, or Fox-glove, is an indigenous biennial plant, found growing generally on the sides of hills, or where the soil is dry, sandy, or gravelly; it flowers from the middle of June to about the middle of August. The lower leaves are in tufts, large, about eight inches in length, and three in breadth, ovate and pointed; the stem leaves are alternate lanceolate: and both kinds have bluntly serrated edges, and wrinkly velvety surfaces: the upper being of a deep green, and the under a pale colour. The flowers, which are numerous, and of a variegated purplish or pinkish red, are attached, on footstalks, to one side of the upper part of the stem, hanging down, and forming an elegant appearance.

The leaves are the parts of the plant used medicinally. They should be gathered when the plant is in flower, and those only which are fresh selected. The leaf-stalks and mid-rib should be rejected, and the remaining part should be dried either in the sun-shine, or on a tin pan, or pewter dish, before the fire, or the plant hung up, each leaf separate, in a warm kitchen. The recent leaves are inodorous, but when dried have a slight narcotic odour, and a bitter nauseous taste. The powder of the leaves should be kept in closely-stopped opaque bottles.

Fox-glove is directly sedative and diuretic; it weakens the force of all the vital functions: and, by a proper exhibition of it, the frequency of the pulse

may be diminished, and the number of pulsations regulated. When given to the full extent which the system can admit, the pulse intermits, and vertigo, indistinct vision, and nausea, with vomiting or purging, occur; and, if the dose be still increased, or if any considerable portion of the herb be inconsiderately swallowed, it produces delirium, hiccough, cold sweats, convulsions, fainting, and death.

It has been efficaciously employed in many inflammatory diseases, in active hæmorrhages, in mania, in scrofula, and in most cases in which it is essential to lessen the usual motion of the blood, as in aneurism, &c. It has been also used with benefit in pulmonary consumption, and dropsy. The kinds of dropsy in which it is most useful are anasarca, ascites, and hydrothorax; and that which succeeds parturition, where the legs and thighs swell, become pale, and semi-transparent, with pain in both groins.

Fox-glove is administered in substances, in decoction, in a watery infusion, or in tincture. When given in substance, it is frequently combined with aromatics, soap, or opium; and most advantageously with calomel and opium, when it is required only to produce diuretic effects. The dose of the leaves in powder is from half a grain to three grains. But it is always proper to begin with a dose not exceeding one grain, made up into a pill with soap or mucilage, and taken twice a day; the dose is to be gradually increased till its effects are apparent, either on the kidneys, stomach, pulse, or the bowels. The medicine must then be discontinued: but in dropsy, it may be repeated again after an interval of some days, if the whole of the water be not evacuated. During its use diluents are useful and necessary; and as soon as it is discontinued, the strength should be recruited, by generous food, chalybeates, and cordial tonics.

The *Infusion of Fox-glove*, ordered by the London College, is to be made thus: Take of dried fox-glove leaves one drachm; of boiling water half a

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pint: macerate for four hours in a lightly covered vessel, and strain: then add of spirit of cinnamon half a fluidounce. The dose is from half a fluidounce to one fluidounce twice a day,

The *Tincture* is made thus: Take of fox-glove leaves dried, four ounces; proof spirit two pints. Macerate for fourteen days and filter. The dose should be ten drops at first, and gradually increased.

The same precautions are necessary in taking either the infusion or tincture, as in the exhibition of the plant in substance.

The deleterious effects of an over dose of this medicine are to be counteracted by cordials, as brandy, mint-tea, and opium; and, when these are not sufficient, by blisters.

We cannot conclude our account of this important medicine without recommending the greatest care and circumspection in its administration.

FOX-TAIL GRASS, or *Alopecurus*, a genus of plants embracing six species, four of which are inhabitants of the marshes and oozy meadows of our own country. The other two are natives of India.

The *Pratensis*, or Meadow Fox-tail grass, is the most deserving of notice. It is a perennial plant, and is valuable for feeding cattle.

FRACTION, in the science of numbers, a part of a quantity, or number, considered as a whole, but divided into a certain number of parts: as 3-4ths of any quantity, a pound for instance, denotes 3 parts out of 4, or 15 shillings. Fractions are most commonly divided into *vulgar* and *decimal*. *Vulgar fractions* are usually denoted by two numbers, the one set under the other: thus $\frac{3}{4}$ denotes the fraction three-fourths of some whole quantity, considered as divided into four equal parts. See **DECIMALS**.

FRACTURES, in surgery, is the breaking of a bone into two or more parts. It is called a *simple* fracture when the bone only is divided; a *compound* fracture when, in addition to the division of the bone, there is a laceration of the

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skin, flesh, &c. the bone being often otherwise injured, and sometimes protruding through the flesh, &c.

The general symptoms of a fracture are, pain, swelling, and tension in the contiguous parts; a grating noise when the part is handled; a certain degree of loss of muscular power in the injured part, also accompanies almost every fracture.

Fractures generally occur after a severe fall or blow. Whenever they happen, no time should be lost in applying to a skilful surgeon, as they are usually attended with such symptoms as require the immediate use of the lancet, and are besides of so serious a nature, that no person who is not well acquainted with anatomy ought to attempt their cure. Before, however, the attendance of a surgeon can be obtained, the limb should be placed in the easiest posture, and the body kept quiet, cool, and open, by emollient clysters.

The greatest care should be taken to retain the bones, after they are replaced in their situations, by proper bandages, which, however, should not be applied too tightly.

With respect to the time necessary for the cure of fractures, much depends upon the age and habit of the patient; in middle-aged persons, and under favourable circumstances, a fracture of the leg or thigh bone may be healed in two months; of the arm in six weeks; of the ribs, clavicles, and bones of the hand, in three weeks. But in old age, a much longer time is generally required than during infancy.

FRACTURES OF THE BONES OF HORSES, are not often attempted to be cured on account of the great trouble and expense attending them, and the chance of the animal being, eventually, of little value, if not altogether useless. The most charitable mode of proceeding, therefore, is to destroy it at once. If, however, the cure be attempted, and it is only in fractures below the knee, or the hock, that there is any probability of success, the divided ends of the bone should be brought together as closely as possible, and be kept in that

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situation by splints, bandages, &c. until the ends of the bone are firmly united. The horse must be prevented from resting on the limb till the union is effected.

FRANKFORT-BLACK, is the chief ingredient in the copper-plate printer's ink. It is made of the lees of wine, burnt, together with ivory, or the stones of peaches and other fruit, washed in water, and then ground in mills. The best is made at Frankfort-on-the-Maine: it is made also at Meutz, Strasburgh, and different parts of France.

FRANKINCENSE, or *Thus*, has been commonly supposed to be the production of a particular species of pine, and that it is of a superior quality to common turpentine. But we are enabled to assure our readers, that the frankincense found in the shops, is the hardest and purest of the common unstrained turpentine, obtained from the pine-trees of North America, and other countries, in abundance, and from which the oil of turpentine of the shops is distilled. See **TURPENTINE**. When frankincense is first taken out of the casks in which it is imported, it is generally more or less soft, but it hardens by age and exposure to the air, so as to become quite brittle. It is obtained in the shops in yellowish masses, having a strong, and rather aromatic smell of turpentine. It is used in the making of Venice **TURPENTINE**, see that article. But it is so similar in its virtues to the common strained turpentine of the shops, as to be deserving of no further notice here. See **PINE**.

The *Gum olibanum*, called frankincense by some writers, is a very different substance from that which we have here described. See **OLIBANUM**.

FRECKLES, are spots of a yellowish colour, frequently appearing about the face, neck, and hands. If they are constitutional, to the individual, they should not be meddled with. But they sometimes arise from too much exposure to the sun, or to the open air; and sometimes happen in consequence of jaundice. They may generally be removed, when not constitutional, by

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some of the following applications: Take of spring water three ounces; of sub-carbonate of potash one scruple; of oil of sassafras three drops: mix them together, and apply the lotion to the parts affected twice a day. Or, the juice of lemons mixed with sugar and borax, finely powdered, in the portion of one ounce of the former to half a drachm of each of the latter; rose-water, with the addition of a little camphor, has also been recommended.

FREEZING, in natural philosophy, a species of congelation; or the transformation of a fluid body into a firm or solid mass, by the abstraction of heat. In which sense the term is chiefly applied to water when it becomes ice. The term freezing is, however, applied to other bodies, particularly when they become solid at low temperatures.

FREEZING - MIXTURES, are those mixtures, of different substances, which produce freezing, and, indeed, a considerable degree of cold, far below the freezing point. Freezing mixtures may frequently be conveniently and economically applied to the purpose of cooling wine or water, in hot climates, or where ice cannot be procured,

The following are some of the most powerful freezing mixtures. A mixture of 5 parts of muriate of ammonia, 5 parts of nitre, and 16 of water, if the thermometer be at 50° will sink it to 10°;—Of nitrate of ammonia and water equal parts, will sink the thermometer from 50° to 4°;—of sulphate of soda 5 parts, of diluted sulphuric acid 4 parts, will sink the thermometer from 50° to 3°;—of snow and common salt, equal parts, from 32° to 0°;—of muriate of lime 3 parts, of snow 2 parts, sinks the thermometer from 32°, the freezing point of water, to 50° below 0°;—of snow 2 parts, of diluted sulphuric acid, and diluted nitric acid, of each 1 part, from 10° below 0° to 50° below 0°;—of snow or pounded ice 12 parts, of common salt 5 parts, of nitrate of ammonia 5 parts, from 18° to 5° below 0°;—of muriate of lime 3 parts, of snow 1 part, from 40° to 73° below

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0°;—of diluted sulphuric acid 10 parts, of snow 8 parts, from 68° to 91° below 0°.

In order to produce these effects, the salts employed must be fresh crystallized, and newly reduced to a very fine powder. The vessels in which the freezing mixture is made, should be very thin, and just large enough to hold it, and the materials should be mixed together as quickly as possible. In order to produce great cold, they ought to be first reduced to the temperatures first mentioned, by placing them in some of the other freezing mixtures; and then they are to be mixed together in a similar freezing mixture.

Care should be taken not to touch any of the bodies cooled down to very low temperatures, particularly the metals, for the same effects as scalding may be anticipated.

FREEZING POINT, denotes the point or degree of cold shewn by a thermometer, at which certain fluids begin to freeze, or when frozen, at which they begin to thaw again. On Fahrenheit's thermometer this point for water is marked at 32° above 0°; and for quicksilver at 40° below 0°.

French-bean. See *Bean-kidney*.

FRENCH HONEYSUCKLE, or *Hedysarum coronarium*, a biennial ornamental plant, well known in our flower gardens: it is a native of the Alps, but thrives very well in this country. There are two or three varieties; the most common has a red flower variegated with white; another has the flower almost wholly white. The seeds should be sown in April where they are to remain. They always blossom the second year, and if the flowers be cropped before the seed is perfected, they will continue to blossom for a year or two longer.

French Marigold. See **AFRICAN MARIGOLD**.

FRENCH MERCURY, or *Mercurialis annua*, an indigenous plant growing on waste places, and flowering in August and September. It is sometimes cultivated in gardens and dressed like spinach; if eaten in large quanti-

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ties it is aperient. It may, possibly, be useful as diet to persons liable to costiveness.

FRESCO, a peculiar kind of painting, adopted principally in the decoration of palaces and churches. The design intended for a wall should be drawn on paper, or on any substance from which it may be transferred to the wet plaster. The mode of proceeding must afterwards be similar to that practised in painting on canvas. The colours should be earth, exclusively, diluted with water sufficiently to make them flow freely, but not to decompose the plaster, and mix its surface with them; long soft-hair brushes should, therefore, be preferred.

Friar's Balsam. See **BENZOIN**.

FRICTION, in **MECHANICS**, the resistance caused by the motion of one body upon another. The least friction is generated when polished iron moves upon brass; the gudgeons and pivots of wheels, should, therefore, all be made of polished iron, and the bushes in which the gudgeons move, and the friction wheels, should be formed of polished brass.

In works of wood the interposition of the powder of black-lead has been found very useful in relieving the motion. The ropes, or pulleys, should be rubbed with tallow; and whenever the screw is used, the square threads should be preferred.

FRICTION, in **MEDICINE**, is the act of rubbing a diseased part with oils, liniments, &c. Friction is also performed with a flesh brush, a linen cloth, or flannel, which last is, perhaps, the best. Frictions of the skin are chiefly useful to those who are debarred from taking the exercise necessary for health: hence the nervous, the debilitated, the studious, and the hypochondriac, who cannot take muscular exercise, will find it advantageous to rub their whole body, and especially the limbs, with a clean piece of flannel for half an hour every morning; and this process is most advantageously performed when the stomach is empty,

FRIENDSHIP, a mutual attach-

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ment subsisting between two persons, and arising not merely from the general principle of benevolence, from views of interest, or from animal passion, but from a sentiment entertained by each party, that the other is endowed with some amiable, estimable, or valuable qualities. Friendship often subsists in the strongest degree among near relations, and ought always to subsist between husband and wife. Friendship requires sincerity and mutual confidence. Its principal fruits are peace in the affections, support in judgment, and aid and support in conduct. The friendship often subsisting between individuals, is just such as we should desire to feel for the whole family of man. Perhaps, from our very nature, it is not possible to avoid being attached more to one person than to another, but we think it quite clear that the more we become acquainted with the intimate motives of human actions, and the more we are disposed to put a benevolent and friendly interpretation upon them, the more near we shall approach to that state of general friendship which all should be desirous to foster and promote, and which has been aptly designated a heaven upon earth.

FRIGHT, a sudden and violent degree of fear. (See **FEAR**.) Fright is frequently productive of very remarkable effects upon the human system. It often produces incurable diseases, such as epilepsy, stupor, madness, and sometimes even death itself. A fright has also occasionally cured diseases, but it is so uncertain in its mode of administration, and withal so dangerous, that it should never be employed for such a purpose. The folly and wickedness of wantonly frightening any one, and particularly young children and females, cannot be too much insisted upon: such conduct is at all times too important in its effects to become, for one moment, the subject of joke.

FRITILLARY, or *Fritillaria*, a genus of plants containing six species. They are all bulbous rooted, flowering perennials, producing annually stalks

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nearly a yard high, ornamented with campanulate, lilaceous flowers. Several are European plants; some supposed to have a Persian origin; one, the *meleagris*, indigenous to the meadows of our own country.

FROG and **TOAD**, or *Rana*, a genus of amphibious animals, with four feet and a naked body, the hind, longer than the fore-legs. It differs from the lizard species, in having a shorter body, broader, thicker head, and, in general, no tail. They feed on insects, are full grown the fourth year, and seldom live, except under peculiar circumstances, beyond the twelfth; very salacious; the tadpole is excluded from the egg without feet, but with a tail resembling a fish's, which drops off as the legs are protruded. Toads are filthy in their aspect, and live in damp, obscure, dark places, and crawl out only by night; their eggs are in a long connected chain. Frogs are more active, more about by day, and lay their eggs in water, in a confused mass of jelly. There are thirty-six species, chiefly natives of Europe and America: four common to our own country. The following are the chief.

The *Pipa*, or Surinam toad, inhabits the waters of Guinea, and is eaten by the natives. In this extraordinary animal, the male, after the exclusion of the eggs, collects the mass together, and smears it over the back of the female with its paws, when they are received into cellules upon the back, impregnated by the male, and then closed up; a about three months the young are extruded.

The *Musica*, or Musical toad, inhabits the fresh waters in Surinam; longer than the common toad; in the evening, and during the night, makes a kind of musical croaking.

The *Bufo*, or Common toad, body of a lucid brown; four varieties. Inhabits the woods and shady damp places, in Europe. Feeds by night, on various insects; it is so tenacious of life, that it has been found alive enclosed in rocks, in the centre of walls and trees, in which it must have existed for years,

FROG

not to say for ages. On being domesticated it has lived forty years. It may, upon the whole, be regarded as an animal perfectly harmless.

The *Rubeta*, or Natter jack, body above dirty yellow, beneath spotted with black; inhabits dry sandy places of Europe; two and a quarter inches long.

The *Rombina*, or Laughing toad, belly orange spotted with sky blue, four varieties. Inhabits fenny places of Germany and Helvetia; leaps like a frog, resembles the common toad, but is small and black; emits a clear sound like a man laughing.

The *Cornuta*, or Horned-toad, the eye-lids being horned, the head large and the mouth excessively large; of all animals this appears to be the most hideous and deformed. Inhabits Virginia and Surinam.

The *Ridibunda*, or Jocular toad, with a brown body; found in the rivers which empty themselves into the Caspian sea; never ventures on dry land; resembles the frog, but larger. Its voice is like a man laughing.

The *Variabilis*, or Changeable toad, colour variable; about two inches long. Inhabits Germany. Its colour varies with its situation: when awake, the body is white with green spots; in the sun entirely cinereous; asleep, the spots only are cinereous, and when torpid, the body is flesh colour.

The *Pipiens*, or Clamorous frog, is green; makes a clamorous noise in the night; takes prodigious leaps; inhabits North America.

The *Temporariu*, or Common frog: two varieties; the first inhabits Europe. The second, which is twice the size of the first, Persia. It lives during spring in water, in summer on land; feeds on various insects: the prey of ducks and cranes; croaks in muddy ditches. The second variety croaks like an angry man.

The *Esculenta*, or Esculent frog, inhabits the fens and waters of Europe. The body is angular; back transversely gibbous: the male makes a continual

croaking in an evening, especially before rain; a voracious animal, when irritated will pursue and destroy a pike; seizes on young birds, mice, or ducklings, swallowing them whole.

The *Paradozica*, or Paradoxical frog, with a body of a pale yellow, with ochre-colour spots; inhabits South America.

The *Arborea*, or Tree frog; body above green, beneath white: five or six other varieties; inhabits Europe and America; lives under the foliage of trees.

The flesh of the *Esculenta*, or Esculent frog, is often eaten in France as food, but we presume that our own countrymen will still prefer the roast beef of Old England; and in this preference we ourselves most heartily concur.

FROG, in the manage, the central horny substance at the bottom of the horse's foot, spreading wide from the heel, having a cleft in the middle, and terminating in a point towards the toe.

Mr. Coleman has contrived a kind of wedge, or ARTIFICIAL FROG, made of cast iron, for the purpose of applying pressure to the horse's frog as he stands in the stable. It is sold at the Veterinary college, St. Pancras, near London, with directions for applying it.

FROG FISH, or *Lophius*, a genus of fishes comprehending eight species, scattered principally through the Northern, South American, and Australasian seas; one found on our own coasts. The following are chiefly entitled to notice.

The *Piscatorius*, Fishing-frog, angler, or frog-fish, with a depressed body, the head rounded, and much larger than the body; grows to seven feet long; lurks behind sand hills or heaps of stones, and throwing over the slender appendages on its head, resembling worms, entices little fishes to play round them; when within its reach, they are instantly devoured; is sluggish, and swims with difficulty. Inhabits most European seas.

The *Monopterigius*, inhabits the seas of Australasia. This very singular fish

FRO

has no fin except a lobate one just above the tail; the body is round, and tapering at both ends.

FRONTAL BONE, or *os frontis*, the cockle-shell-like bone, which forms the forehead, and contains the two anterior lobes of the brain. In the fetus it is composed of two bones.

FROST, such a state of the atmosphere as causes the congelation of water into ice. In the more northern parts of the world, even solid bodies are affected by frost, sometimes perhaps in consequence of the water which they contain, and so expanding, as water is known to do when frozen, it bursts and rends any thing in which it is contained, as plants, trees, stones, and large rocks. Water is expanded by frost, for which reason, ice floats on water; but other fluids such as alcohol and quicksilver, &c. are contracted by it; and hence frozen quicksilver sinks in the fluid metal.

Frost is particularly destructive to the blossoms of fruit-trees, and in addition to what is said under the article **COLD**, we give here the following method for securing trees from being damaged by early frosts. A rope is to be interwoven among the branches of the tree, and one end brought down so as to be immersed in a bucket of water. The rope it is said, will act as a conductor, and convey the effects of the frost from the tree to the water.

If by any unexpected accident, greenhouse plants become frozen during the night, they should be shielded from the immediate contact of the sun's rays in the morning, and for this purpose, the shade of a wall is to be preferred: or pouring water over them very near the freezing point of coolness, will gradually restore the lost heat. Removing them into a warm room, or before a fire, will most certainly destroy them.

If vegetables of any other kind should become frozen, the heat should be gradually restored to them in the same way. And if potatoes, apples, &c., are frozen, they should be treated much the same as if they were living animals. See **COLD**.

FRU

We had a large box of apples, some years since, frozen by the accidental circumstance of the cover's being left open, upon a discovery of which, the cover was closed, and when the thaw commenced, the apples were thawed so gradually, by being in a close wooden box, a bad conductor of heat, that not one of them was injured by being frozen.

To preserve roots as well as fruit from the effects of frost, dry dust, sand, saw-dust, or cut straw, are well adapted for this purpose. Potatoes, turnips, onions, carrots, parsnips, &c., may be placed in dry dust, sand, or saw-dust, either under or above the ground, and covered with straw, or chaff.

For the method of treating frozen limbs, and persons apparently dead from being frozen, see **COLD**.

FRUITS, SUMMER. Under this term, physicians comprehend strawberries, cherries, currants, gooseberries, mulberries, raspberries, and the like. They possess a sweet, sub-acid taste, and, eaten as dietetic auxiliaries, are refrigerant, antiseptic, attenuant, and aperient.

They are unquestionably useful, as well as agreeable, when taken in moderation, but eaten in large quantities, they have often produced unpleasant effects. The dyspeptic, in particular, should be very cautious in their use. Those fruits which are less acid are, in general, more liable to ferment in the stomach, than those which are more so: the acid either preventing the fermentation in the stomach, or, operating as a laxative, the contents of the stomach are propelled into the intestines before fermentation commences.

FRUIT-TREES, are such as bear fruit: namely, **APPLE, CHERRY, PLUM, PEAR** trees, &c. For the particular culture of which see the respective articles.

FRUSH, among farriers, the frog of a horse's hoof. It also denotes a disease of the frog, more commonly, however, denominated thrush, which See.

Fucus. See **SEA-WRACK**.

FUN

FUEL, the aliment or food of fire. See **CHARCOAL**, **COAL**, **COAL-BALLS**, **COKE**, &c., see also **FURNACE**.

Fuller's-earth. See **CLAY**.

FULLING, the art, or act of cleansing, scouring, and pressing cloths, stuffs, and stockings, to render them stronger, closer, and finer : called also milling. The fulling of cloths is performed by a mill, denominated a fulling-mill, and the materials used for the purpose are, fuller's-earth, urine, soap, and water. The fulling of stockings, caps, &c., is performed either with the feet or the hands, or a kind of wooden rack, either armed with teeth of the same matter, or else horses' or bullocks' teeth.

FULMINATION, in chemistry, explosion, or detonation, accompanied with a very considerable sound.

A fulminating powder may be prepared from nitre, potash, and sulphur ; from gold ;—from silver ; and from quicksilver. But as the utility of all these preparations is very doubtful, and their explosion dangerous, we do not think it advisable to describe them in a Family Cyclopædia.

FUMIGATION, in medicine, the impregnation of an apartment, or the atmosphere, with a substance in the state of vapour or fumes, in order to cure a disease.

Fumigation of *stables*, when thought necessary for the cure of any contagious disease of horses, may be made with the same materials as mentioned under **CONTAGION**, which see.

FUMITORY, or *Fumaria*, a genus containing thirty species, chiefly European plants ; five indigenous to the fields, woods, or walls of our own country. They are mostly low, and shrubby, but some are herbaceous ; with small simple leaves, and papilionaceous flowers. The *officinalis*, found in our own fields, was formerly employed medicinally, as a cardiac and alterative ; but it is now scarcely heard of in medical practice.

FUNCTION, that power or faculty by which any action of an animated body is performed. The functions of

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the human body are divided into vital, by which life is immediately supported, as the action of the heart, arteries, and respiration ; animal, which are affected through the operation of the mind, as the external and internal senses, the voluntary action of the muscles, voice, watching, and sleep ; natural, by which the body is preserved, as hunger, thirst, mastication, deglutition, digestion, &c., and lastly, the sexual functions.

FUNDS, the **PUBLIC**, are those large sums of money which have been lent to the government, from time to time, and which constitute the national debt ; and for which the lenders, or their assignees, receive interest. The term **STOCKS** is used in the same sense.

The establishment of the funds was introduced in Britain at the Revolution, and has since been gradually enlarged to an amazing extent. And although the debts thus contracted by government are seldom paid for a long term of years, yet, any creditor of the public may obtain money when he pleases, by transferring his property in the funds to another ; and regular methods are appointed for transacting these transfers in an easy manner. By these means the funds become a kind of circulating capital ; and have the same effect in some respects as the circulating money in the nation.

The principal funds are, the three, four, and five, per cents. The four and five per cents usually yield the largest interest in proportion to the sums laid out in their purchase ; but the three per cent consols, as they are commonly called, are the most saleable. At the present time, April 22d, 1820, the three per cent consols are at 69 $\frac{3}{4}$, and the five per cent navy at 105 $\frac{3}{4}$: the annual interest for the first being three pounds, and for the last five pounds.

Considerable care is requisite in the purchase and transfer of the public funds. At the Bank of England, where the transfers are effected, a variety of precautions have been adopted to prevent fraud ; but, notwithstanding individuals who purchase in the funds, or who receive dividends, can scarcely

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be too cautious. The purchases and transfers are generally effected through the medium of brokers; and persons not well acquainted with such transactions should employ a broker by all means, taking care at the same time, that he is respectably recommended. Indeed, throughout all these transactions, reference and recommendation are essential.

Persons who cannot be personally present at the transfer of stock, or at the receipt of the dividends, must give a power of attorney for some other person to sell the stock, to or receive the dividends for them. Such power of attorney must be applied for, and obtained at the Bank of England, for these purposes, and afterwards be filled up and executed by the party who desires either to sell his stock, or to receive the dividend.

Those persons, therefore, who wish to avoid the trouble attendant on property, when vested either in lands or houses, or who desire to have their money always ready for any purpose, for which it may be unexpectedly wanted, will find the funds the most convenient, although, perhaps, not always so profitable.

FUNDAMENT, in anatomy, the lowest part of the *intestinum rectum*, called by anatomists the anus.

Fungus. See **MUSHROOM**.

FUNGUS, a term used in surgery, to express any luxuriant and improper formation of flesh. It is sometimes vulgarly called *proud flesh*.

FUR, the soft hair of beasts which covers the skin.

Fur deserves no commendation as an article of dress: wool is certainly much superior to it. A fur dress readily imbibes infection, and acquires an intolerable smell. It is said that whole nations wearing fur garments, are liable to obstinate cutaneous diseases; and even the plague is supposed to be spread among the Turks chiefly by their absurd and cumbersome dresses, lined with animal hair.

FURNACE, an apparatus for the

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purpose of exciting and maintaining vehement combustion.

In the construction of all furnaces, the chief points to be attended to are, to confine the heat as much as possible to the matter to be operated upon;—to prevent its being dissipated;—to produce as much heat with as little fuel as possible;—and to have it in our power to regulate the degree of heat according to our pleasure.

To answer the first intention, the fire is usually confined in a chamber, or cavity, built on purpose for it, and furnished with a door for putting in the fuel; there is also a grate for supporting it, and allowing air to pass through, as well as the ashes to drop down into a cavity beneath, called the ash-pit. The second intention is obtained by shutting the door of the furnace, taking care that the chimney be not too wide, and that the matter to be acted upon be placed in such a manner, that the fire may have its full effect upon it, either previously to, or at the entrance into the chimney. The third intention, the most important, and most difficult to answer, is regulated by the proportion which the spaces between the furnace bars bear to the wideness and height of the chimney. But as in the construction of the common chimneys of furnaces, a considerable quantity of heat unavoidably passes up the chimney, a contraction of them occasionally, by a sliding plate, offers the best remedy. This plate should be confined, so that if necessary, it may shut up the whole vent, and by being drawn out more or less, leave a larger or a smaller vent at pleasure. This plate ought to be drawn quite out till the fuel is thoroughly kindled, and the furnace well heated, so that a current of air may flow strongly through the fuel. After this the plate should be put in to a certain length, so as just to prevent the smoke from coming out of the door of the furnace. The sliding plate may be made of cast iron in those furnaces where no great heat is excited; but, in others, fire-clay will be more conve-

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nient. The fourth intention is accomplished by allowing only a certain quantity of air to pass through the fuel. This may be best effected by shutting up the door of the ash-hole perfectly close, and having a set of round holes made in it, bearing a certain proportion to one another, and their areas being as 1, 2, 4, 8, 16, &c; seven or eight of such holes will give a sufficient command over the fire.

When the fire is to be increased to the utmost, all the passages, both above and below, are to be thrown open, and the height of the vent augmented; which, by increasing the height of the column of rarefied air, increases also the motion of that through the fuel, and consequently, also the heat of the furnace.

In the economizing of heat, it is of importance that the materials which surround the furnace should be such as will most effectually prevent the heat from escaping, as much as possible, in every direction except that where it is to be usefully applied. The observations which we have made under the article **BOILER**, are also applicable here.

The fuels employed in furnaces are of different kinds, according to the nature of the furnace, or the material to be operated upon; hence we have wood, charcoal, coal, coke, coal-cinders, culm or Welch coal, Kilkenny coal, and turf.

Various patents have been from time to time obtained, for the construction of furnaces, but we cannot even enumerate them.

Besides the furnaces alluded to above, many are constructed for particular operations. Those known by the names of *Dr. Black's portable Furnace*;—the *Portable Chamber Furnace*;—the *muffle Furnace*;—the *Reverberatory Furnace*, for roasting and melting ores;—the *Refining Furnace*;—the *blast Furnace*, or *Cupola*, are used for a variety of important operations in chemistry, metallurgy, and the arts. See **BOILER**, **CHIMNEY**, and **FIRE-PLACE**.

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Furor Uterinus. See **NYMPHOMANIA**.

FURROW, in Agriculture, a term used for the trench made by the plough; it is also often used for any long trench, or hollow. See **HUSBANDRY**, and **PLOUGHING**.

FURZE, **GORSE**, **WHIN**, or *Ulex*, a genus of shrubs consisting of three species, as follow; all of which are occasionally cultivated.

The *Europæus*, or Common furze, or Gorse, a well known shrub, furnished with an abundance of spines, and yielding yellow flowers at almost all seasons of the year; found abundantly on our heaths and commons.

The *Nanus*, or Dwarf furze, lower than the common sort, with a less flaming orange, or yellow flower; found wild on our elevated mountains.

The *Capensis*, Cape, or African furze, growing to the height of six feet in its natural soil, but producing no flowers in England.

The tender tops of common furze are eaten by goats, sheep, and some other animals, and the dried branches are occasionally crushed and given to horses. The principal use of furze, is, however, for fire-wood and fences.

"Lands covered with furze are, generally speaking, adapted for the purposes of agriculture. Where it is found in a thriving state, every species of grain, of roots, and grasses, may be cultivated, after its extirpation, with advantage.

FUSION, a chemical process, by which bodies are made to pass from the solid to the fluid state, in consequence of the application of heat.

FUSTIC, or *Morus Tinctoria*, is a fine timber tree, a native of America; its wood is a principal ingredient in many of our yellow dyes, for which purpose it is chiefly imported into Europe. See **DYEING**. The berries are sweet and wholesome, but not much used, except by birds, who scatter them very widely, and hence largely contribute to the propagation of the plant.

G.

GAD

GAD-FLY, or *Æstrus*, a genus of insects consisting of twelve species, as follow :

The *Bovis*, or Ox gad-fly, having brown wings; the belly with a black band in the middle, and orange-yellow hairs at the tip; legs black. It deposits its eggs on the backs of cattle, under the skin, which, as the eggs are changed into larvae, produce a purulent tumour. By the pain it inflicts an extreme terror and agitation is occasioned, and the object of the attack runs bellowing wildly about, with its tail erect, and in a tremlulous motion, and communicates its agitation to the whole herd.

The *Equi*, or Horse gad-fly. See **BOTT**.

The *Hæmorrhoidalis*, or smaller Horse gad-fly. See **BOTT**.

The *Veterinus*, or Cattle gad-fly, deposits its eggs on horses and oxen: the larvae probably pass through the stomach, and form botts, as in the preceding species.

The *Ovis*, or Sheep gad-fly, with pelucid wings; and belly variegated with white and black. Deposits its eggs on the inner margin of the nostrils of sheep, occasioning them to shake their heads violently, and hide their noses in dust or gravel. The larvae crawl up into the frontal sinuses, or horns, and when full fed, are again discharged through the nostrils.

The *Cuniculi*, or Rabbit gad-fly; black; wings brown; twice as large as the horse gad-fly; deposits its eggs in the skins of hares and rabbits. inhabits Georgia.

The *Buccatus*; grey, face white, dotted with black: a large insect, inhabits Carolina.

The *Taraudi* inhabits Lapland, and deposits its eggs on the back of the rein deer, and is often fatal to it.

The *Trompe*, having white wings,

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and a black body, also inhabits Lapland, on the rein deer.

The *Antilopæ*, deposits its eggs on the back of the antelope, and inhabits Asia.

The *Fasciculosus*; of a downy yellow colour; inhabits Siberia.

The *Hominis*, or Human gad-fly; having a body entirely brown; inhabits South America, and deposits its eggs under the skin, on the bellies of the natives. The larve, if it be disturbed, penetrates deeper, and produces an ulcer, which frequently becomes fatal.

GALANGAL, or *Galangu minor*, the root of a grassy-leaved plant, brought from China and the East Indies. It has an aromatic smell, not very grateful, and an unpleasant, bitterish, hot, biting taste. It was formerly in common use as a warm, stomachic bitter, but is now rarely employed. The pungent matter of Galangal appears to be of the same nature as that of pepper.

GALBANUM, commonly called *Gum Galbanum*, is a gummy-resinous juice, obtained from the *Bubon Galbanum*, a perennial plant, a native of Africa, about the Cape of Good Hope and Syria, rising eight or ten feet high, with a ligneous stem: When the stem of the growing plant is broken, or wounded by a knife, a cream-coloured juice flows out: this gum-resin is procured by making an incision, or cutting the stem across, a few inches above the root; when it soon concretes, and is fit to be gathered. It is brought to this country from the Levant; it has a strong peculiar odour, slightly resembling that of turpentine, and a bitterish, warm, acrid taste.

Galbanum is accounted antispasmodic, expectorant, and deobstruent, and seems similar in properties to assafoetida and ammoniac. It is said to be useful in hysteria and chlorosis. But as an

internal medicine we do not think it of much importance. Externally it is used either alone or in plasters, as a resolvent, and a stimulating supplicative to indolent tumours. The dose of the gum-resin is from ten grains to one drachm in pills, or triturated with water, so as to form an emulsion.

Compound pills of Galbanum, formerly called *Gum Pills*, are ordered by the London College to be made thus: Take of galbanum an ounce; of myrrh, sagapenuin, of each half an ounce; assafoetida half an ounce; syrup a sufficient quantity. Beat them together, into a uniform mass. The dose of these pills is from ten grains to half a drachm. See ASSAFOETIDA and PLASTER.

Gale. See CANDLE-BERRY MYRTLE.

GALENA, an ore of lead, in which that metal is combined with sulphur, hence it is called *Sulphuret of Lead*. See LEAD.

Gall. See BILE.

GALL-STONES, or concretions formed in the gall-bladder, are of various sizes and colours. They often enter into the biliary ducts, and obstruct them, causing jaundice, with violent pain for some time; and which can be, by no means cured, till the concretion is either passed entirely through the ductus communis, or returned into the gall-bladder.

In the removal of this complaint, riding on horse-back, as mentioned under jaundice, if it can be borne, by the concussion which it gives the viscera, is of great importance; so also are gentle emetics, and cathartics. Opiates and the warm bath, will be found also often advantageous. But, of course, in serious complaints of this nature, a physician should be consulted. See JAUNDICE.

GALL, GALLS, or GALL-NUT, an excrescence produced on the *quercus infectoria*, a species of the oak, growing throughout all Asia Minor. It has a crooked stem, and seldom exceeds six feet in height, and more frequently assumes the character of a shrub than that of a tree. The gall grows on the shoots of the young boughs, and is pro-

duced by an insect, the *cynips quercus-folii*; this insect punctures the tender shoot with its sting, and deposits its egg in the puncture. This is soon hatched, and in consequence of the irritation occasioned by the maggot feeding on the juices of the plant, so much excitement is induced, that the vegetable wen, or gall-nut, is the result.

When the galls are gathered before the larva within changes to a fly, and eats its way out, they are of a dusky green colour, and are called, in commerce, *blue galls*, and are by far the best. Those which are collected after the fly has eaten its way out, are of a whitish yellow, considerably lighter than the blue galls, and of an inferior quality. Galls are brought to this country chiefly from Aleppo.

A species of galls obtained from China, could they be obtained in sufficient quantity, is said to be superior to the Aleppo galls.

Galls are the most powerful of the vegetable astringents. They are seldom used as an internal remedy, although, in combination with bitters, or aromatics, they have been given in obstinate diarrhoeas, passive intestinal hæmorrhages, and intermittents. They are frequently ordered in the form of gargles and injections; and an ointment, formed with one drachm of galls in fine powder, eight drachms of simple ointment, and one scruple of powdered opium, is a useful application to blind piles. The dose of powdered galls, internally, may be from ten grains to one scruple, twice or thrice a day.

Galls are used in large quantities in the arts, principally for the purposes of dyeing, and for making ink. See DYEING, INK, and the next article.

GALLIC ACID, an acid existing in large quantities in the gall-nut; it may also be obtained from most astringent vegetables, particularly the husks of nuts, the barks of oak, chesnut, ash, hazel, sumach, poplar, elder, elm, sycamore, cherry-tree, &c., and various other plants. It is usually found accompanied with the *astringent principle*. See TANNIN.

GAL

Gallic acid, when pure, is in whitish crystals, of a sour taste, and which exhale a peculiar smell when heated. It dissolves in about 10 parts of water, at 60°, and in two parts at 212°. It is also soluble in alcohol and ether. It may be obtained, by several processes, from galls. Boiling water extracts it from the bruised galls very completely, but the solution must undergo subsequent processes in order to yield the pure acid. If eight ounces of powdered galls be infused in a quart of water for four days, and agitated occasionally, then pressed and filtered, the fluid, if left in a glass bottle, covered with paper, for two months, will deposit crystals of the acid in considerable quantity.

When an infusion of galls is added to certain metallic solutions, it forms a precipitate, composed of tannin, gallic acid, and the metallic oxide, and as these are often of different colours, the infusion is employed as a test for such metals. The following metals, in solution, are thus thrown down of the annexed colours.

Iron	— purple or black
Copper	— brown
Lead	— white
Antimony	— white
Bismuth	— orange
Cobalt	— yellowish white
Uranium	— chocolate-brown
Titanium	— brownish-red
Cerium	— yellowish
Tellurium	— yellow
Arsenic	— little change
Molybdenum	— deep brown
Chrome	— brown
Columbium	— deep orange
Nickel	— grey
Mercury	— deep yellow
Osmium	— purple, becoming blue
Silver	— yellow-brown
Platinum	— dark green

The metals not mentioned above, are either not precipitated, or their action has not been examined.

Of the above compounds the *tannogallate of iron* is of most importance, as forming the basis of writing ink and black dyes.

GAL

Calling, in medicine. See **EXCORIATION**.

Calling of the back of a horse. See **BACK-GALLED**.

GALLINA, a name often given in this country, to that species of the *Numidia*, or Guinea-hen, termed *melagris*. See **GUINEA-HEN**.

Gallinule. See **COOT**.

GALLON, a measure of capacity, both for dry and liquid things, containing four quarts, which varies according to the nature of the commodity measured; a *wine* gallon contains 231 cubic inches, and holds eight pounds avoirdupoise, of pure water; the *beer* and *ale-gallon* contains 282 cubic inches, and holds ten pounds three ounces and a quarter, avoirdupoise of water; the gallon for corn, meal, &c. contains 272 and a quarter cubic inches, and holds nine pounds thirteen ounces of pure water.

GALVANISM, or **VOLTAISM**, is that curious and important branch of electricity which depends upon metallic combinations.

For the earliest insulated facts discovered in 1790, in this science, we are indebted to professor **GALVANI**; for their explanation and application to purposes of utility, to professor **VOLTA**; and for the grand and simple law of nature by which they operate in the production of effects, to Sir **HUMPHRY DAVY**.

When an insulated plate of zinc is brought into contact with one of copper, or silver, it is found, after removal, to be positively electrical, and the silver or copper is left in the opposite state. If the nerve of a recently killed frog be attached to a silver probe, and a piece of zinc, be brought into the contact of the muscular parts of the animal, violent convulsions are produced every time the metals, thus connected, are made to touch each other; exactly the same effect is produced by an electric spark, or the discharge of a very small Leyden phial.

If a piece of zinc be placed upon the tongue, and a piece of silver under it,

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a peculiar sensation will be perceived every time the two metals are made to touch. In these cases the chemical properties of the metals are observed to be effected. If a silver and a zinc wire be put into a wine glass full of dilute sulphuric acid, the zinc wire will evolve a gas; but upon bringing the two wires in contact with each other, the silver will also copiously produce air bubbles.

If a number of alternations be made of copper or silver leaf, zinc leaf, and thin paper, the electricity excited by contact of the metals will be rendered evident to the common electrometer. If the same arrangement be made with the paper moistened with brine, or a weak acid, it will be found, on bringing a wire communicating with the last copper plate into contact with the first zinc plate, that a spark is perceptible, and also a slight shock, provided the number of alternations be sufficiently numerous. This is the **GALVANIC** or **VOLTAIC apparatus**.

Several modes of constructing this apparatus have been adopted, with a view to render it more convenient and active. Sometimes double plates of copper and zinc soldered together are cemented in wooden troughs in regular order, the intervening cells being filled with water, or saline solutions. Another form consists in arranging a row of glasses, containing dilute sulphuric acid, in each of which is placed a wire, or plate of silver, or copper, and one of zinc, not touching each other, but so connected by metallic wires that the zinc of the first glass may communicate with the copper of the second; the zinc of the second with the copper of the third, and so on throughout the series. By applying the moistened fingers to the extreme wires, a shock will be felt; and on making a communication between them by a wire, it will be found that the copper plates and silver wires, instantly acquire the power of decomposing the dilute sulphuric acid, and that the chemical action of the zinc is much augmented. Another method is, to pile zinc and copper plates, one up-

on the other, placing moistened flannel between each pair of plates: and having made 50 or 60 such alternations, the same effect will be produced: the zinc plate will give a positive, and the copper extreme a negative charge to the gold-leaf electrometer. This has been called the **VOLTAIC Pile**.

But the best form of a galvanic apparatus, hitherto devised, consists in troughs made of earthenware, with partitions of the same material; and the metallic plates are attached to a bar of wood, so that they can be immersed and removed at one operation. The troughs are filled with dilute acid, and by uniting them in regular order, the apparatus may be enlarged to any extent; it is thus that the great apparatus at the Royal Institution of Great Britain is constructed.

When from 500 to 1000 double plates are thus arranged, and rendered active by immersion in a liquid, consisting of about sixty parts of water, with one of nitric, and one of sulphuric acid, very brilliant effects are produced, when the opposite poles are properly united by conductors. Thus, if a piece of charcoal united with the negative wire, be made to touch another piece united with the positive wire, a bright spark, and intense ignition ensue; and by slowly withdrawing the points from each other, a constant current of electricity takes place through the heated air, producing a magnificent arc of intense light.

When the metals, and other inflammable bodies, are played in this arc of fire, they burn with great brilliancy; and those which are most difficult of fusion, give evidence of the intensity of the heat, by instantly melting; some earthy and other bodies, infusible by ordinary methods, are also liquified by the same means. When the effects of this apparatus is applied to the human body, it produces a shock which is painful and dangerous.

When the communication between the points of charcoal is made in rarefied air, the annihilation of the opposite electricities takes place at some

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inches' distance, producing a stream of deep purple light. And on immersing the wires from the extremes of this apparatus into water, it is found that the fluid is decomposed, and that oxygen gas is liberated at the positive wire or pole, and hydrogen gas at the negative pole.

Many other substances are decomposed with similar phenomena, the inflammable element being disengaged at the negatively electrical surface; hence it would appear, upon the principles of electrical repulsion and attraction, that the inherent, or natural electrical state of the inflammable substances is *positive*; for they are attracted by the negative pole, while the bodies called supporters of combustion, or acidifying principles, are attracted by the positive pole, and, therefore, may be considered as possessed of the *negative* power.

By this apparatus the most difficult decomposable compounds may be resolved into their component parts; by a weak power the proximate elements are separated; and by a stronger power these are resolved into their ultimate constituents.

It was by means of this last apparatus, that Sir HUMPHRY DAVY decomposed, at the Royal Institution, bodies which were previously supposed to be simple substances. Platina melted as readily as wax, in the flame of a common candle; quartz, sapphire, magnesia, lime, all entered into fusion; fragments of diamond, and points of charcoal and plumbago, rapidly disappeared. Such are the decomposing powers of electricity when exhibited in this form, that not even insoluble compounds are capable of resisting its energy: for even glass, sulphate of barytes, fluor-spar, &c., when moistened and placed in contact with electrified surfaces from the Galvanic apparatus, are slowly acted upon, and the alkaline, earthy, or acid matter carried to the poles in the common order. Not even the most solid aggregates, nor the firmest compounds, are capable of resisting this mode of attack; its operation is slow, but the results are certain; and sooner or later, by means of

it, bodies are resolved into simpler forms of matter.

Although copper and zinc are most commonly used in the construction of the Galvanic apparatus, they are not the only metals which are capable of exciting movements in the muscles of dead animals: almost any two metals will produce the movements, but it is believed that the most powerful are the following, in the order in which they are here placed: 1 zinc; 2 tin; 3 lead; in conjunction with 1 gold; 2 silver; 3 molybdena; 4 steel; 5 copper. Upon this point, however, philosophers are not agreed.

The discovery of the peculiar power of galvanism in exciting the muscles of animals, has been productive of a great number of experiments by various persons. Professor ALDINI, a nephew of GALVANI, pursued the subject some years since in this country, with great zeal and success. His experiments on a criminal who had been executed, were very striking. On the first application of the process to the face, the jaw began to quiver, the adjoining muscles were horribly contorted, and one eye was actually opened. In the subsequent part of the process, the right hand was raised and clenched, and the legs and thighs were set in motion. It appeared to the uninformed part of the by-standers, as if the wretched man was about to be restored to life.

But the latest experiments with which we are acquainted, are those made by Dr. URE, on the dead body of a criminal executed at Glasgow, in 1818. The subject of these experiments was a middle-sized, athletic, and extremely muscular man, about thirty years of age. He was suspended from the gallows nearly an hour, and made no convulsive struggle after he dropped. He was brought to the anatomical theatre of the University, in about ten minutes after he was cut down. The Galvanic apparatus consisted of 270 pieces of four-inch plates, with wires of communication, and pointed metallic rods, with insulating handles, for the more commodious application of the electric

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power. The battery was charged with a dilute, nitro-sulphuric acid, which speedily brought it into a state of intense action. A large incision was made into the nape of the neck, and a part of one of the vertebræ was removed, so that the spinal marrow was brought into view; a considerable incision was made in the left hip, so as to bring the sciatic nerve into sight, and a small cut was made in the heel. The pointed rod connected with one end of the battery, was then placed in contact with the spinal marrow, while the other rod was applied to the sciatic nerve. Every muscle of the body was immediately agitated with convulsive movements, resembling a violent shivering from cold. The left side was most powerfully convulsed, at each removal of the electric contact. On moving the second rod from the hip to the heel, the knee being previously bent, the leg was thrown out with such violence as nearly to overturn one of the assistants, who in vain attempted to prevent its extension.

In the second experiment, the left phrenic nerve was laid bare, at the outer edge of the *sterno-thyroideus* muscles, from three to four inches above the clavicle; the cutaneous incision having been made by the side of the *sterno-cleido-mastoideus*. A small incision having been made under the cartilage of the seventh rib, the point of the one insulating rod was brought into contact with the great heart of the diaphragm, while the other point was applied to the phrenic nerve in the back. This muscle, the main agent of respiration, was instantly contracted, but with less force than was expected. Upon this it occurred to Dr. URE, that more powerful effects can be produced in galvanic excitation by leaving the extreme communicating rods in close contact with the parts to be operated on, while the electric chain, or circuit is completed, by running the ends of the wires along the top of the plates in the last trough, of either pole, the other being steadily immersed in the last cell opposite the pole: he had im-

mediate recourse to this method. The success was truly wonderful. Full, nay, laborious breathing, instantly commenced. The chest heaved and fell; the belly protruded, and again collapsed, with the relaxing and retiring diaphragm. This process was continued without interruption, as long as the continuance of the electric discharges.

In the judgment of many scientific gentlemen present, this respiratory experiment was the most striking ever made with a philosophical apparatus. It should not be forgotten that, for full half an hour before this period, the body had been well nigh drained of its blood, and the spinal marrow severely lacerated. No pulsation could be perceived meanwhile at the heart or wrist; but it may be supposed that but for the evacuation of the blood,—the essential stimulus of that organ,—this phenomenon might also have occurred.

In a subsequent experiment on the same body, the supra-orbital nerve was laid bare, as it issues through the supra-ciliary foramen in the eye-brow: the one conducting rod being applied to it, and the other to the heel, most extraordinary grimaces were exhibited: every muscle in the countenance was thrown into action; rage, horror, despair, and ghastly smiles united their hideous expression in the murderer's face, surpassing the wildest representations of a Fuseli or a Kean. Several of the spectators were forced to leave the apartment, from terror or sickness; and one gentleman fainted.

The last experiment was made by transmitting the electric power from the spinal marrow to the ulnar nerve near the elbow. The fingers moved nimbly, like those of a violin performer; and an assistant who tried to close the fist, found the hand to open forcibly, in spite of his efforts. The one rod being applied to a slight incision in the tip of the fore-finger, the fist being previously clenched, that finger instantly extended, and from the convulsive agitation of the arm, he seemed to point to the different spectators, some of whom thought he had come to life.

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In deliberating on the above galvanic phenomena, we are almost willing to imagine that if, without cutting into, and wounding the spinal marrow and blood-vessels in the neck, the lungs had been excited into action at first, by electrifying the phrenic nerve, which may be done without any dangerous incision, there is a probability that life might have been restored. Future experiments must, however, determine this important question. In the mean time, it cannot be forgotten that galvanic experiments on other animals seem to prove, that the *heart* loses its vitality much sooner than other muscles, and that this organ is not, as *Harvey* asserted, the *last* thing which dies, but rather the *first*.

Galvanism has been employed by **DR. WILSON PHILIP**, as a remedy in asthma. By transmitting its influence from the nape of the neck to the pit of the stomach, he gave decided relief in twenty-two cases. The power employed varied from ten to twenty-five pairs of plates. That it may be also employed with advantage in many other spasmodic diseases, and palsy, as well as suspended animation, from various causes, we cannot doubt; but farther experiments are necessary to decide how, and when it may be so employed. No domestic prescriber should use this powerful stimulant without the advice of an experienced medical attendant.

GAMBOGE, CAMBOGE, or *Cambohia*, a gum resin, obtained from a tree, the *Stalagmatis Cambogioides*, a native of Siam and Ceylon. It is brought to this country packed in cases; it is inodorous, nearly insipid, breaks with a glassy fracture, and is of an orange yellow colour. When wetted it tains the fingers of a brilliant yellow, it dissolves partly in water, and almost wholly in alcohol.

Gamboge is a powerful drastic cathartic, and frequently excites vomiting, even in moderate doses. It has been used efficaciously in obstinate costiveness, dropsies, and for the expulsion of tape-worms; but from the violence of its operation it should be administered

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with caution. An alkaline solution of it has been recommended in dropsy. But it is most commonly given in the form of pills, in doses of from two grains to six, variously combined.

Compound Pills of Camboge, are ordered by the London College to be prepared thus: Take of camboge powdered, of extract of spike aloe powdered, of compound cinnamon powder, of each a drachm; of hard soap two drachms. Mix the powders together; then, having added the soap, beat the whole together until they are thoroughly incorporated. This medicine is considerably more active than the aloetic pills. The dose is from ten grains to one scruple, given at bed-time, in obstinate costiveness.

As a pigment, gamboge makes a beautiful yellow, much used by painters; it is an ingredient in yellow lacquer; and it is also used by the cabinet maker, to stain woods yellow.

GAME, among birds and beasts, are those which are prohibited, in this country, from being killed, except by persons duly qualified by the law. At the present time game includes the hare, pheasant, partridge, heath-fowl, moor-game, rabbits not in warrens, woodcocks, snipes, quails, landrails, &c. But our laws are so numerous relative to game, and, we may add, generally, so repugnant to the common sense of mankind, that we have neither room nor inclination to treat this subject at large.

Persons legally qualified to kill game, must be in the full and undisputed possession of a freehold landed estate, producing a clear 100l. per annum; or of a lease, or leases, for ninety-nine years, or any longer term, of the clear yearly value of 150l., or else the heir apparent of a squire, or other person of higher degree. Some other persons are also privileged to kill game, but we cannot enumerate them. Game keepers, appointed in manors, must obtain an annual license; and so also must every other qualified person who kills game, the neglect of obtaining which subjects the parties to a penalty.

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Unqualified persons who kill game, are also liable to severe penalties.

GAME, a sport or diversion that is performed with regularity, and restrained to certain rules. See **GYMNASTIC EXERCISE**.

Games which are used only for exercise and amusement, which do not tempt a person to waste valuable time, and which involve no pecuniary transactions, nor excite the malignant passions, may be harmless; nay, sometimes they are necessary relaxations from the severe duties either of labour, of business, or of study. But every game which involves money transactions, which excites unpleasant feelings, or which tempts a person to a waste of time, is improper, and should be discountenanced.

Several acts of parliament have been made, expressly to prevent or to regulate **GAMING**, and gaming-houses: the 33d Hen. VIII., c. 9;—the 16 Car. II., c. 7;—9 Anne, c. 14;—and 12 Geo. II., c. 28, as well as various other statutes. By the third mentioned statute, not only all notes, bills, bonds, mortgages, or other securities given for money won at gaming are declared void; but also, where lands are granted, they shall go to the next person entitled after the decease of the person so encumbering the same. Persons losing, by gaming, at one time, more than 10*l.* may recover the money lost, from the winner, by an action of debt, brought within three months; and on the losers not prosecuting, any other may lawfully do it, and recover treble costs. See **AMUSEMENT**, and **CARDS**.

GANDER, the male of the Goose. See **GOOSE**.

GANGLION, in anatomy, a knot in the course of a nerve.

In surgery, it is a tumour formed in the sheath of a tendon, and containing a fluid like the white of an egg. It most frequently occurs on the back of the hand or foot. Ganglions are generally produced by sprains or contusions of the joints, or by rheumatisms. They are sometimes indicative of a scrofulous habit, and then arise without any appa-

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rent cause. They sometimes go off insensibly, without any assistance of art; but as this is not often the case, means ought to be used for removing them. For this purpose, moderate friction, frequently repeated, or gentle compression applied to them, by means of thin plates of lead, &c., sometimes removes them. In some instances they have been removed by the application of blisters; but the most certain method is to make a small puncture into the sac, and to draw a cord through it; or, after the puncture is made, to press out the contents, and then inject some gently stimulating fluid, as port wine and water, heated blood-warm. In this operation, however, care should be taken not to induce too much inflammation, a slight degree of it being sufficient to answer the purpose.

GANGRENE, a disease arising, in general, from excessive inflammation. When the colour of an inflamed part changes to a dark red, and when blisters arise on it, containing an ichorous fluid, the pain in the part considerably abating, this is called gangrene. But if the part becomes black, flaccid, and insensible, loses its heat, and acquires a putrid smell, it is then called **MORTIFICATION**, which see.

A gangrene seldom affects those who enjoy a good habit of body, although even in them it may be brought on accidentally, by whatever destroys the texture of the part; as continued pressure, blows, and contusions, or whatever deprives it of its nourishment. Gangrene is also produced by cold in very cold climates; such gangrene comes on suddenly, without any pain or previous inflammation; and the patient himself is frequently insensible of it, till he is informed of his situation by some other person. A defect in the circulation, in extreme old age, also frequently occasions mortification of the extremities.

Every case of gangrene is attended with more or less danger: for even in the slightest cases the patient may suffer from the spreading of the disease; but slight cases, from external injuries, are more favourable than those which

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arise from internal causes ; although no person can be considered safe till the diseased parts are separated and cast off : when inflammation takes place round a mortified part, more especially if matter be formed, it is an indication that the cure is likely to take place.

If the patient suffer from fever and great heat of the inflamed part, blood-letting, and whatever has a tendency to moderate the inflammation, may check the progress towards gangrene ; but as the patient in such cases is apt to sink afterwards, nothing more ought to be done than is merely necessary to moderate the present symptoms. If gangrene takes place when the patient is weak, and the pulse low, nourishing diet, beef-tea, the Peruvian bark, and the free use of wine, or even brandy, will be necessary. If the stomach cannot bear the bark in substance, the compound tincture may be given. External applications of a stimulating nature, may likewise be useful.

Warm balsams, ardent spirits, and alcohol, have been recommended as external applications to the diseased parts, but it is believed that a gentle stimulating embrocation will be found much more effectual in this complaint. The following is, perhaps, the best : Take of muriate of ammonia one drachm ; of vinegar two ounces ; of water six ounces : dissolve, and mix. If this should be found to stimulate the part too much, the quantity of the muriate of ammonia may be lessened ; if not enough, it may be increased. A decoction of bruised oak bark, in the proportion of six ounces of bark to a quart of water, boiled down to a pint, and applied, in a cold state, to the diseased part, every half hour, has been also recommended.

Scarifications may sometimes be of service in gangrene, but they will not be, of course, adopted, without the aid of the surgeon.

When a separation of the mortified part has taken place, and a discharge of matter produced, the sore is then to be considered as a simple purulent ulcer, and treated in the same manner.

GANGUE, in mineralogy, a term

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used to express the earthy and stony substances in which metallic ores are generally enveloped.

Gannet. See **PELICAN**.

Gaol. See **PRISON**.

Gar-fish. See **PIKE**.

GARDENING, the art or science of laying out a plot of ground for the purpose of landscape, esculents, or flowers.

LANDSCAPE GARDENING, is an art, which, during the last fifty years, has arrived at great perfection in this country. The chief object at present pursued, and which ever ought to be pursued in the construction of picturesque garden scenery, is, to follow nature, and not to force her ; to catch her own local views and intentions, and to perfect them ; but by no means to banish or exchange them for views and intentions she may exhibit in other situations, even though these last may be more magnificent or imposing : in every respect we ought to endeavour to intermix unity with utility, and utility with proportion, and harmony of parts to the whole.

In doing this, our chief attention is, of course, to be paid to the fore-ground, which is, in general, not merely of the highest importance, but the part, usually, most at the disposal of a proprietor. Wherever a person stands, the contiguous objects, immediately before him, form a fore-ground to the scene at which he is looking ; and by the fore-ground, how much is the general prospect affected ! There are few who delight in landscape, who have not perceived that the general harmony and beauty of a scene result from a due proportion of its parts, and their consonance with nature ; but the greater distances, and especially the back-ground, are seldom within the power of art. In order, therefore, to harmonize the whole scene, a judicious adaptation of the objects through which the eye beholds it, is essentially necessary. A path is a series of fore-grounds ; and to adapt each part of this to the various combinations of the distant objects, which always result from change of place, or aspect, is the proper business of art :—to produce a selection of

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well-adapted greens, which shall contrast or mix their colouring into it;—such interruptions as may frequently give the charm of renewal to that of which we have been for a time deprived; the absolutely unintervening foliage of shrubbery beneath the eye, and the shade of forest foliage above it; in which latter case, the best portions of the distant scene may be selected and beheld from between the stems of the trees, which should be so situated, as sometimes, by affording lateral limits, to reduce the view even to the strictest rules of composition; and thus, from the varieties of the fore-ground, the general scene is also perpetually varied.

Distant scenery, however, can never be viewed in parts, but only altogether; and hence nothing can be more absurd than attempts which we often meet with, of counteracting the uniform operations of aerial perspective by spotting the remote hills with little circumscribed clumps of dark foliage, and to intersect, by regular fences, what is formed to please only by the singleness and majesty of the whole.

In a word, ornamental gardening should in its whole contour exclude, as much as possible, every vestige of the appearance of art, buildings and other subjects to which art is essential, of course, excepted. NATURE in this delightful study must be our chief director, and to whom, in every difficulty, we must constantly refer.

There are some features of the garden scene which are sometimes lost if intermixed with its general range, and hence, perhaps, may be seen to most advantage when contemplated alone.

The ORNAMENTAL, or FLOWER-GARDEN, is of this kind, and often appears to the greatest advantage, when standing apart from the general scene, and confined to some glade or other sheltered seclusion; although it is not difficult to imagine peculiarities of situation, where a departure from this rule might be adopted with great effect. The form and disposition of its beds, although they ought to be positively irregular, should not be broken into

too many round and disjointed patches, but only seem to interrupt the green sward walks; and, like the mazy herbage that, in forest scenes, usually surrounds the underwood, wind carelessly among them, and running from side to side through every part of the scene, frequently meet the gravel path that leads round the whole. Here architectural forms, emblematic of the virtues or the arts, the busts of the good and the wise, the votive tablets of friendship or of esteem, may often be gracefully and successfully introduced. Even an insulated old apple-tree with some such inscription as the following, might possibly be, in such situations, not wholly devoid of interest and the picturesque.

Beneath my shade repose and hear my voice !
Ere last eventful century sprang to light,
I stood where now I stand. Spring smiles as
fair

And summer laughs, midst all the flowery train,
As beautiful as when, at first, my youth
Flung forth the fairest foliage—but not so
With him who placed me here—he, long ago,
Was gathered to his fathers ; many a son
Of Adam since hath sigh'd beneath my shade,
My dainties tasted and with hoary head
Descended to the grave. My branches now,
Remind me of my fate ; my withering limbs
Portend my ruin near, and tell the tale,
That all of earth must perish ! Yet, O man !
Thy fate for thee, a happier doom hath fixed :
I fall to rise no more ; but thou shall rise,
And be thou grateful to the *King of Kings*,
To live for ever in the realms of light.

In the flower-garden, however, all art which is more apparent than is necessary, should be avoided. Convenience has tempted the gardener to plant many flowers in distinct compartments: thus tulips, ranunculuses, &c. are generally, even now, with all our improvements in taste, planted in groups, separately from other flowers; how much more beautiful would they appear intermixed promiscuously with the jonquil, narcissus, &c. &c., and peeping upon us, occasionally, from some unexpected winding? In truth, many of our modern flower-gardens, remind us rather of the stiff arrangements of the nursery-man, involving mere considerations of profit, than the

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tasteful variety every where so conspicuous in nature, and none more so than in her flowers. Such arrangements, have no pretensions to nature or taste, and, in the ornamental flower-garden, should be carefully avoided.

The KITCHEN-GARDEN, can scarcely be considered as ornamental. The best situation for it is, a gentle inclination of the land towards the south; and if towards the north, or north-east of it, there be rising ground, a hill, or wood, so much the better; but the south-east, south, and south-west should be as open as possible. The choice of soil is also of some importance: that which is loose and porous, is to be preferred to that which is clayey and close. It should, generally, be situated on one side of the house, and near the stable, that dung might be easily conveyed into it. The borders next the wall, should be eight or ten feet broad. Upon those borders exposed to the south, many sorts of early plants may be sown; while upon those exposed to the north, late crops may be raised; taking care, however, not to plant any sort of deep-rooting plants, especially beans and peas, too near the fruit-trees.

The ground should next be divided into sections: the best figures for these, is a square, or an oblong; or they may be of that shape which will be most advantageous to the ground; and their size should be proportioned to the garden; if they be too small, the ground will be lost in walks, and the beds being enclosed by espaliers, the plants will not have sufficient light. The walks should also be determined on the same scale: these in a small garden, may be six feet broad, or even less, but in a larger one ten; and on each side of the walk, there should be a border three or four feet wide between it and the espalier, in which may be sown sallad, or other herbs which do not take deep root. In one of these divisions situated nearest to the stable, and best defended from the cold winds, should be the hot-beds for early cucumbers, melons, &c.; and to these it is ad-

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visable to have a passage from the stables, for the conveyance of dung.

The most important points of general culture consist in well digging and manuring the soil, allowing a proper distance to each plant, and keeping it clear from weeds.

Those who garden on a large scale, should be provided with every convenience: a proper spot for a range of hot-beds, and another for hot-houses and green-houses, will be necessary; a tool-house, and a room for the preservation of bulbs, seeds, &c., are also convenient appendages. Even in gardening on a small scale, a choice of implements is desirable. If water can be introduced, and kept clean with verdant banks around it, it will be advantageous; it should be supplied from a pond rather than from a spring.

For the particular operations in gardening, see the articles BUDDING, GRAFTING, PRUNING, PLANTING, &c., and also the respective articles on FLOWERS, SHRUBS, TREES, and CULINARY VEGETABLES, throughout our work.

GARGET, a term used for a disease of the head of horse-, and other animals, commencing in the eyes and lips, and extending to the gums and tongue. It is said to be sometimes contagious; but generally yields without difficulty to bleeding and cathartics.

GARGET of the LIMBS, *Joint yellows*, or *Rheumatic lameness*, appears to be brought on by a chill. Working oxen, are said to be more subject to it than cows. It appears at first as a severe cold: the coat soon appears rusty, the hair stands on end, and the hide sticks to the ribs; the animal walks with pain and difficulty. In obstinate cases, the joints seem to crack and swell, and there is also a tumefaction of the udder. Bleeding, at the commencement of the disease, is necessary; and if the bowels be not sufficiently open, a purgative drench must be given. After the operation of the purgative, the following drench may be given daily for two or three days: Take of camphor two drachms; of tincture of opium half

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a fluidounce ; of balsam of capivi one ounce. To be given in ale.

When the joints are swollen, they should be rubbed with an ointment composed of equal parts of olive-oil and a solution of ammonia.

GARGLE, or **GARGARISM**, in medicine, a fluid preparation applied to the throat and fauces.

GARGLE, among horned-cattle, a disease consisting of an indurated tumour of the dewlap, progressively extending to the breast and throat. It appears to be of a scrofulous, indolent nature, and yields to rowels, and other local stimulants.

GARGUT, a disease of cows, sheep, &c., frequently affecting the glands of the udder with hard swellings. It is sometimes supposed to arise from the cow not being clean milked. It may be removed by anointing the part twice a day, with an ointment composed of one ounce of mercurial ointment, with which has been well mixed, one drachm of camphor in powder. Or a liniment made thus : Take of lard four ounces ; of solution of ammonia one ounce ; of oil of origanum one fluidrachm, mix them together. If the disease be violent, a purging drench, composed of Epsom, or Glauber's salts, may be given : twelve ounces of either, dissolved in a quart, or more, of water.

GARLIC, a genus of plants, of which fifty species have been traced through the different parts of Europe, and four or five others in the West Indies and America. Those most common to ourselves are the following :

The *Sativum*, or **COMMON GARLIC**, is a perennial bulbous-rooted plant, found wild in Sicily, and cultivated in most parts of Europe, for culinary and medicinal use. It flowers in July. The bulbs of this species are numerous. The stem is about two feet in height, and terminated by a mixed cluster of flowers and bulbs, which last are equally efficacious with the roots, and are used and planted for propagation in the same way. It is dug up for use in August. All the parts of the plant, but particularly the bulbs, have a pun-

gent, offensive odour, and an acriminous, biting taste. These properties depend on an essential oil, which may be separated by distillation with water. It is of a thick ropy consistence, of a yellow colour, heavier than water, and possessing, in an eminent degree, the sensible qualities of the garlic. It blisters the skin when applied to it, and strikes a black colour when rubbed with oxide of iron.

Garlic is stimulant, diaphoretic, expectorant, diuretic, and anthelmintic, when given internally ; and rubefacient, when applied externally. It has been given with success in intermittents, and in typhous fevers ; and, if the body be kept warm during its use, it acts powerfully by diaphoresis. It is said to be also a valuable remedy in pituitous, asthma, chronic catarrh, flatulent colic, calculous complaints and dropsies ; and as a preventive of worms. It is applied bruised, externally to the soles of the feet, in the stupor, or coma, attending typhous fever ; and in the confluent small-pox, when there is a considerable determination to the head. A strong infusion of garlic has also been recommended in epilepsy. A poultice made of it is useful for indolent tumours ; and a clove split, wrapped in cotton, or a few drops of the juice introduced into the external ear is, sometimes, useful in deafness. A poultice of this root applied to the pubis, in retention of urine, is sometimes effectual in renewing the discharge. The juice is also applied, united with oil, to some kinds of tetters.

It may be given in substance, the whole clove, or pieces of it, being swallowed, or it may be formed into pills. When the juice is given, it may be mixed with sugar. The bulbs are sometimes infused in milk, and given to children for worms. In dropsical cases, the bulbs are united with calomel, either in the form of pills or boluses.

The dose of the bulbs, or cloves, in substance, is, from one drachm to two ; or from one to six cloves swallowed whole, twice or thrice a day ; and in pills united with soap or calomel, from fifteen grains to one scruple ; of the

GAR

juice half a fluidrachm may be given in any proper vehicle.

An over dose, or the too liberal use of garlic as a condiment, is apt to occasion head-ache, flatulence, fever, and discharges of blood from the hæmorrhoidal vessels. Indeed, upon this well-known article, both as food and medicine, we have the same observations to make, as we have made upon *ASSA-FŒTIDA*, to which, therefore, we refer; merely adding here, that those who expect to receive much benefit from the internal use of garlic as a medicine, must not use it as a common, or daily condiment.

Garlic is considered by some writers on *Farriery*, as a valuable remedy for coughs and asthmatic complaints in horses: two or three cloves should be cut small and given with each feed.

The *Scordoprasum*, or Rocamboile; —the *Escalonecum*, Shallot, or Eschalote. See *ESCHALOTTE*; the *Ursinum*, or Ramsons; the *Cepa*, or Onion. See *ONION*; —the *Fistulosum*, or Welsh-onion; —and

The *Schænoprasum*, *CIVES*, or Chives, which abounds in meadows and pastures, and flowers in the month of June. It is propagated by parting the roots; its green small stalks, form a pleasant admixture with other salads in the spring. It is milder in smell and taste, than either garlic or the onion.

GARTER, a ligature used for keeping up the stockings. The use of garters, or other ligatures on the legs, or thighs, should, if possible, be avoided, as they are always, more or less, injurious to the circulation of the fluids, and the free use of the muscles of the lower extremities. It has been suspected that dropsies of the legs and thighs have been sometimes produced by garters. At any rate, persons afflicted with swellings and other diseases of the thigh and leg, should avoid the use of garters: indeed we think they may be avoided altogether by some trifling alteration in the making of our dress.

GAS, an elastic, æriform, homogeneous fluid, most commonly colourless, and not condensible by the usual tem-

GAS

perature of the atmosphere. Till lately, the term air was often employed as equivalent to gas: thus Dr. Priestley termed oxygenous gas, which he discovered, *vital air*; Dr. Black, carbonic acid gas, *fixed air*, &c. But the more correct philosophy of the present time, has adopted gas as a specific, air, often, although not always, as a generic term: we say ammoniacal gas, carbonic acid gas, hydrogenous gas, oxygenous gas, &c: and when we speak of some mixtures of gases, such as common air, we say atmospheric air, the air of mines, &c.

For the obtaining of most gases in the small way, common glass or earthenware retorts are most commonly used; or where a red heat is required, they may be made of wrought iron, either in the same form, or in that of a bottle, tube, or other convenient shape.

The *gas-apparatus*, *pneumatic apparatus*, or, as it is now termed, the *hydro-pneumatic apparatus*, for the reception of gases immediately after they are disengaged by the agency of fire, galvanism, &c., consists of a japanned iron or copper vessel, of different shape and size, according to the particular purposes for which it is intended, and contains a shelf, perforated with holes, through which the gas may pass from the neck of the retort, &c, into inverted vessels, properly placed for its reception. When the gases are such as are not absorbed by water, this apparatus is filled with it, so deep as to cover the shelf perforated with holes, an inch or more. When the gases are those which water absorbs, quicksilver must then be employed instead of water. A very ingenious hydro-pneumatic apparatus, in combination with the blow-pipe, has been lately made by Mr. CUTHBERT; an account of it, with plates, will be found in Vol. XVII. of *The Trans. of the Society of Arts*.

A knowledge of the various gases, and the method by which they may be obtained, is now become so essential and important, that almost every person is interested in their history or their development. That which has more

GAS-HOLDER

particularly excited the public attention, generally, to the subject of gas, is the employment of carburetted hydrogen in the illumination of our streets, and many of our public, as well as private buildings. But we may most confidently predict that the general use of gas, or gases, will not stop here: almost every day, their qualities and uses become more completely unfolded, and their applicability to other processes in the arts and sciences, will be the necessary consequence of experiment and research. Indeed we have now lying before us the specification of a patent, lately granted to Messrs. GUNDRY and NEAVES, for an application of gases, or vapours, to various useful purposes.

It is well known, that in the distillation of coal, the production of inflammable gas from oil, and in the burning of lime-stone, a large quantity of gas, mixed more or less with vapours of various kinds, is generated, or liberated, by the action of heat on the substances employed. These gases are, in some instances, as in the burning of lime-stone, allowed to escape without any use being made of them. Messrs. Gundry and Neaves have applied the gases so generated, or liberated, to the purpose of working a piston in a barrel, and by which a mechanical first mover, or power, is obtained, capable of driving wheels, or other machinery; or to the purpose of forcing water, or any other liquid, by means of such gases pressing thereon, by their elastic power. A consideration of great importance in this patent is, that coal-gas, which the patentees chiefly employ, may be first used as a moving power, and afterwards is *still perfectly applicable to the purposes of gas illumination.* See CARBONIC ACID, CARBURETTED HYDROGEN, HYDROGEN, &c., and also the next article.

GAS-HOLDER, or GASOMETER, a vessel used for the purpose of receiving, retaining, and measuring gases. Where it is intended to introduce different substances into the gas, it may be made of glass, of an oblong, bell-shape, drawn into a neck, with a glass stopper at top, and open at bottom.

Some should be graduated into cubic inches, and supplied with a stop-cock at the neck. For measuring small quantities of gases, tubes are employed, some of which should be divided into 100 equal parts, others into tenths, and hundredths of a cubical inch. Mr. PEPYS's improved gas-holder is also a useful apparatus.

Where large quantities of gases are required to be collected and preserved, *gasometers* are employed. They may be made of Japanned iron, or copper; and, if of a very large size, they may be painted. They are of various shapes, round, square, &c. The most usual consists of an outer circular vessel or pail, to the sides of which two tubes, each fitted with a stop-cock, are soldered: one of these tubes enters the bottom of the pail, and proceeds to the centre, where it joins the other tube, which enters the top of the pail, and proceeds downwards; from the junction of these tubes at the bottom, an upright tube rises through the middle of the pail, a little above the level of the upper rim. Another vessel of this apparatus is a cylinder, open only at bottom, and of less diameter than the pail, into which it is inverted, and in which it can move up and down freely. This cylinder has a solid stem, which passes through a hole in the cross bar of a frame fixed to the top of the pail; it serves to steady the cylinder, and to indicate the quantity of the enclosed gas; the weight of the cylinder may be counterpoised in any convenient way.

To use this *Gasometer*, first let the cylinder fall to the bottom of the pail, and fill the latter with water; then shut the upper cock, open the lower one, and connect with it the tube which conveys the gas from the retort or other vessel; or, if more convenient, shut the lower cock, and convey the gas through the upper cock. The gas rises, and gradually lifts up the cylinder, which must be properly balanced; and, when sufficiently filled, the cock by which it entered must be closed. The gas may now be drawn off at either of the stop-cocks, by a tube passing into the water.

GEL

tough, or it may be propelled through a blow-pipe, or otherwise employed.

Gastric Juice. See **DIGESTION**.

GAVELKIND, a tenure, or custom, belonging to lands in the county of Kent, and a few places elsewhere. The principal features of this custom are, that the tenant is of age sufficient to dispose of his estate at the age of 15;—that the estate does not escheat in case of an attainder and execution for felony; and the lands descend to all the sons together.

GAUGING, the art of measuring the capacities or contents of all kinds of casks, and determining the quantities of fluids or other matters contained therein.

The common practice of gauging is performed by the gauging or diagonal rod, which is introduced into the bung-hole of the cask, and pushed down to the furthest extremity of the head, at its insertion into the staves; and provided the bung-hole be exactly in the middle of the cask, the contents, in ale or wine gallons, will be found marked on the rod at the edge, or rather the middle of the bung-hole. This is sufficient for common purposes; but the following rule has been devised, which is much more exact: Add into one sum 39 times the square of the bung diameter; 25 times the square of the head diameter; and 26 times the product of those diameters; multiply the sum by the length of the cask, and the product by the number .000334; the last product, divided by 9, will give the number of wine gallons, and by 11, the number of ale gallons.

GAUZE, in commerce, a thin, transparent stuff, sometimes woven with silk, and sometimes only of thread.

Gauze veils have lately been proposed as preservatives from contagion.

GAZETTE, a newspaper; but *the Gazette* means, in this country, the newspaper under this name, published by authority.

The first Gazette in England, was published at Oxford, the court being there, Nov. 7, 1665.

GELATINE, one of the constituent

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parts of animal bodies. It is colourless, semi-transparent, and nearly tasteless. It is softened with long-continued immersion in cold water: in hot water it readily dissolves, and forms a solution of a slight milky appearance, which, if sufficiently concentrated, concretes, on cooling, into the tremulous mass usually called jelly, and which is easily soluble in cold water; when dried in a gentle heat, it acquires its original appearance, and is as soluble as before. When dry it undergoes no change, but in solution it soon becomes mouldy and putrescent. Gelatine obtained from different animal substances differs considerably in its viscosity.

The principal varieties of gelatine in common use are, *Glue*, which is prepared from the clippings of hides, &c;—*Size*, which is obtained from parchment-shavings, fish-skin, and several animal membranes;—*Isinglass*, obtained from the entrails of several fish;—*Leather*, a compound of gelatine and tannin.

The *true skin*, in the human subject, as well as in most animals, is composed principally of gelatine; the different membranes of the body, as well as the tendons, are also composed chiefly of gelatine; the muscles, and even bones, yield also a portion of this substance: much of the nutritive property of animal food depends upon the quantity of gelatine which it contains.

GELDING, any animal which is castrated, particularly a horse.

GELDING denotes also the operation of castration. See **HORSE**.

GEM, a general name applied to all precious stones. Gems may be arranged in four classes. The diamond, and the oriental ruby form the first class; in the second are the emerald, star-stone, oriental girasol, sapphire, spinell and balass rubies, oriental topaz, oriental amethyst, and noble opal; in the third, jargon, cat's-eye, oriental chrysolite, hyacinth, and peridot; and in the fourth and lowest class, are the beryl, aqua marina, Brazilian topaz, Saxon topaz, Syrian garnet, Bohemian garnet, and European amethyst. Of these none are of much importance, except as orna-

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ments. The diamond, however, is deserving of separate consideration. See DIAMOND.

GENERATION, in physiology, the propagation of the species, whether of plants or animals.

On this curious subject it is not our intention much to dilate. The generation of plants is, however, deserving of the serious attention of the naturalist: for although the path has been pointed out by Linnæus, and other botanists, we are far from thinking that a rich harvest of further information is not yet to be obtained, by accurate observation, and attentive research.

Relative to the generation of animals, the subject is, and perhaps ever will be, involved in much obscurity. The theory of Buffon seems to be that which, at present, obtains the most general assent; this theory was, it is said, first promulgated by the Epicurean philosophers; and although DARWIN, BLUMENBACH, and others, have since promulgated theories of generation, they do not appear to be essentially different from BUFFON's, which last has received considerable confirmation by the experiments of SPALANZANI, and KOELREUTER, and their result as applied by WERNER.

GENERATION, a term implying the series of children derived from a common parent.

It is also more frequently employed to signify an age, or the average period of human life. A generation, in chronology, means, therefore, the period of 33 years.

GENEROSITY, that disposition of the mind which prompts us to part with what we possess, although it might be, apparently, our immediate interest to retain it. Generosity forms a part of that universal system of benevolence which it is the duty of the moralist and the teacher to inculcate and promote. It is not confined merely to the imparting of pecuniary benefits, but includes, in its extensive and best signification, the most amiable and desirable qualities which we are capable of displaying. In a word, it involves so far an immediate dereliction of self, that the happi-

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ness of others may be capable, by its re-action upon our own minds, of conferring upon us more pleasure than the selfish avoidance of deeds of generosity ever can produce. Generosity, however, pre-supposes the right to confer: that generosity is spurious which gives away to one object or objects, that to which another is in justice entitled; hence arises the common and appropriate observation;—be just before you are generous.

Gnet. See VIVERRA.

GENEVA, or **GIN**, a hot, fiery spirit, too much used by the lower classes in this country as a drachm; and is, unquestionably, very injurious, both to their constitutions and morals.

Geneva was formerly obtained by distilling over a spirit in which juniper berries had been previously infused; but the principal part of British Geneva is now made from malt spirits, with oil of turpentine for the flavouring material, or angelica roots, or sweet fennel seeds.

Hollands Geneva is said to be manufactured chiefly at a village near Rotterdam, from juniper berries, and French brandy. But we do not believe that the actual process is known in this country; and incline strongly to suspect that French brandy does not enter into its composition.

English gin, considered medicinally, or taken diluted as a common beverage, appears to be superior to Hollands: principally, we presume, from its diuretic effects. Notwithstanding, we are far from advocating the constant use of this beverage; yet that it may be sometimes taken for a season with advantage, in some complaints of the urinary passages, we cannot permit ourselves to doubt; least of all are we disposed to reprobate this liquor because it might happen to contain *oil of turpentine*, conceiving, as we do, that its possessing this ingredient is one of its best recommendations.

GENIUS, a term applied to those persons who possess a natural capacity to perform well, and apparently without effort, that which others can do but

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indifferently, and with a great deal of pains. The distinguishing characteristic of genius is invention. A man of genius is fertile in the production of new trains of thought, new expedients for the removal of difficulties, &c. Thus, genius may be termed the power of making new combinations, whether pleasing, grand, or useful to mankind. This capacity of the human mind, considered in its uses, has great relation to ambition. When genius is employed in the support of virtue, of truth, and the happiness of our fellow creatures, it is meritorious, and demands our warmest commendation; but when it is employed to increase the misery, the vices, and the general unhappiness of our species, as, we are sorry to say, it too often is, then genius becomes a curse, and is no longer entitled to our respect.

GENTIAN, or *Gentiana*, a genus of plants containing fifty-six species, scattered over the globe, but the greater number are alpine plants: five are indigenous to the pastures or mountains of our own country. Those of most note are

The *Lutea*, a native of the Alps, Pyrenees, Apennines, Germany, and North America. It is a perennial plant. The leaves are large, and spear-shaped; the stem rises three or four feet high; the flowers are large, yellow, and beautiful. The root is the only part of the plant used medicinally; it is brought to this country from Germany, in pieces of various lengths and thickness, twisted, wrinkled on the outside, and covered with a brownish grey cuticle. It has no particular odour; the taste is intensely bitter, without being nauseous. Its qualities are extracted by ether, alcohol, and water.

Gentian root is tonic, stomachic, and, in large doses, aperient. It has been found beneficial in dyspepsia, gout, hysteria, jaundice, chlorosis, dropsy, diarrhoea, and in all cases of general debility where such tonics are indicated. It is sometimes joined with the Peruvian bark in intermittents; and, according to circumstances, it may be combined with

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orange - peel, chalybeates, aromatics, squills, mineral acids, and neutral salts. On account of its antiseptic effects on dead animal matter, its infusion has been applied to putrid ulcers. It is generally given in tincture or infusion; sometimes as an extract, which last is chiefly used as a vehicle for the exhibition of metallic oxides.

The dose of the powdered root is from ten grains to two scruples; and of the extract from ten grains to half a drachm.

The following preparations are ordered by the London College:

Compound Infusion of Gentian. Take of Gentian root, sliced, orange-peel, dried, of each one drachm; fresh lemon-peel, two drachms; boiling water, twelve fluidounces. Macerate for an hour, in a lightly-covered vessel, and strain. From one to two fluidounces of this infusion may be given for a dose, three or four times a day.

Compound Tincture of Gentian. Take of gentian root two ounces; orange peel, dried, one ounce; cardamom seeds, bruised, half an ounce; proof spirit two pints. Macerate for fourteen days and filter.

This is an elegant stomachic cordial; and is similar to, but more simple in its preparation, than the quack medicine long known under the name of STOUGHTON'S ELIXIR. The dose is from one to two fluidrachms.

The *Acaulis*, or Long-flowered gentian, is a native of the Alps, but frequently found in our flower gardens, to the beauty of which it contributes in no small degree, by its elegant and variable little azure flowers.

The *Nivalis* is found both in our own country and on the Alpine mountains.

GENTLEMAN, is commonly defined a person of good family, or descended of a family which has long borne arms. This definition is, however, too confined. The term gentleman, at the present time, not only implies a person of a good family, but also one who is well-bred, and accomplished in manners, mind, and conversation. Every

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thing low, mean, vulgar, and grovelling, is necessarily excluded from the idea of a gentleman. A nobleman, or even a king, may, or may not be a gentleman: a man may also be very rich, and yet no gentleman; whilst another, with a very slender fortune, might yet be the perfect gentleman. See GOOD-BREEDING.

GENUS, the third division in a systematic arrangement of animals and vegetables; class and order being the first and second. The genus agrees with animals or plants of the same class and order, in certain invariable parts of their structure, but disagrees in others. Species is a still more minute subdivision. See SPECIES.

GEOGRAPHY, the science which teaches and explains the nature and properties of the earth, as to its figure, place, magnitude, motions, celestial appearances, &c., with the various lines, real or imaginary, on its surface. Geography also implies a knowledge of the various countries of the world, its seas, rivers, lakes, mountains, &c.

The study of geography, in its most extended signification, should form a part of the education of every rational being. We cannot enlarge on this subject, but persons who are desirous of applying themselves to geography will find a variety of works in this country well worthy their attention. The outlines of this science are best studied with the assistance of a globe. Those who are anxious to obtain the latest, best, and most copious information, may consult with advantage, a splendid work now publishing, in quarto, by Mr. MYERS, with numerous plates.

GERANIUM, sometimes called CRANE'S BILL, a genus of plants containing thirty-nine species, scattered over the globe; of which nearly half are indigenous to our own country; of these the dove's-foot, or *Columbinum*, is the most common.

The cultivated geranium adds much to the beauty of our gardens and green-houses; and there are few, except those of the most southern climates, which may not be injured to the common tem-

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perature of our external atmosphere, if proper pains be taken to accustom them gradually to the change. They may be all propagated either by seed or cuttings: the cuttings may be made in any of the summer months, and when well rooted, should be exposed till October, to the external air, to harden them.

GERMANDER, **SPEEDWELL**, or *Teucrium*, a genus of plants containing sixty-four species, scattered over the globe; three common to the walls, woods, or marshes of our own country. The following are cultivated: The *flavum*, or yellow-flowered, shrubby germander;—*scordonia*, or sage-leaved germander;—the *canadense*, or Nettle-leaved germander;—the *montanum*, or Dwarf mountain germander;—the *pyrenaicum*, or Pyrenean germander;—the *polium*, Poley germander;—the *capitatum*, or Round-headed German-der;—the *pumilum*, or Dwarf germander;—the *fruticaris*, or Narrow-leaved germander;—the *latifolium*, or Broad-leaved germander; the *creticum*, or Cretan germander;—the *marum*, Common marum, or Cat-thyme;—the *chamæpitys*, or Common ground pine;—the *scordium*, or Water germander;—and the *chamædrys*, or Official germander.

The germanders, properly so called, may be propagated either by seeds or cuttings. The seeds should be sown in April, in light earth, and in the autumn following, the plants may be transplanted to the places in which they are designed to remain. The cuttings should be planted in the spring, in a bed of fresh light earth, and be watered till they have taken root. They may be transplanted in the autumn, the same as the seedling plants.

The different sorts of *polium* may be propagated by seeds, which must be procured from the countries where they naturally grow: for they seldom ripen their seeds in this country. They may be also propagated by cuttings, or slips, which should be planted in the beginning of April.

The *chamædrys*, found in gardens,

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may be increased by parting the roots in autumn, or by sowing the seeds at the same season. The *chamæpitys* may be raised by sowing the seeds in autumn. The best plants are, however, those which come up from the seeds spontaneously. The *marum* is a native of Syria, and of Valencia in Spain. It is propagated by cuttings, planted in any of the summer months. Cats are great enemies to this plant, and when it stands single they generally destroy it; they never meddle with it when planted in large clusters, which is, indeed, the only way to save it. The *Scordium* is a native of England, and is increased by parting the roots, by cuttings, or slips, which should be planted in March.

The *scordium*, *chamæpitys*, *chamædrys*, and *marum*, were formerly used medicinally, but are now accounted of no importance.

GERM, in botany, the ovary, or seed bud: the rudiment of the fruit yet in embryo.

GERMINATION, in botany. When a seed is placed in a situation favourable to vegetation, it very soon changes its appearance: the radicle is converted into a root, and sinks into the earth; the plumule, on the other hand, rises above the earth and becomes the trunk, or stem. During these changes the seed is said to germinate; and the process itself is called germination.

GESTATION, the state, or period, during which the young of different animals remains inclosed in the matrix of the female.

Although forty weeks is the usual term of gestation in the human female, yet well authenticated instances have occurred in which this period has extended to eleven, twelve, and even more than twelve months.

The following observations respecting the **GESTATION** of several **ANIMALS**, extracted from a memoir read to the *Académie Royale des Sciences*, of Paris, by M. **TESSIER**, are important.

In 131 *Cows*, whose usual period of gestation is nine months, the shortest

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period was 240 days, and the longest 321 days.

In 582 *Mares*, whose usual period of gestation is 290 days, the shortest period was 287 days, the longest 419 days.

In 2 *Asses*, whose usual period is 290 days, one carried 380, and the other 391 days.

In 912 *Ewes*, whose usual period is five months, the variation was from 146 to 157 days.

In 8 female *Buffaloes*, the shortest period was 321 days, and the longest 338 days.

In 4 *Bitches*, whose usual period is 63 days, the shortest period was 58, and the longest 62 days.

In 161 *Rabbits*, whose usual period is 30 days, the shortest period was 27, and the longest 35 days. See **INCUBATION**.

From these facts we are enabled to draw the important conclusion, that although there is a general period of gestation, to which every animal of the same species most commonly conforms, yet, that this general period cannot always be relied on, the exceptions being numerous, and so well authenticated, as to place this conclusion beyond the possibility of doubt.

GID, or **GIDDINESS**, a disease affecting the head of sheep, and some other animals. It is sometimes occasioned by water in the head, for the cause of which see **BRAIN DROPSY** of, in **SHEEP**. But it sometimes arises in sheep from other causes. We have known sheep affected with giddiness, which no remedy could reach: they usually, in such cases, pine and die: on dissection, a large worm is sometimes found beneath the cavity of the horn.

Pigs are also affected with giddiness, occasioned by feeding on flatulent food, and it is said, that the best remedy is; to drive them about for a considerable time, by which means, an abundant evacuation will be promoted, and the animal relieved. But we think this a doubtful remedy.

GILDING, the art of spreading, or covering any substance with gold, either in leaf, or in a liquid state.

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Dissolve gold in the nitro-muriatic acid ; immerse pieces of linen in the solution, dry them and burn them to ashes ; these should be finely pulverized, and rubbed on silver, by means of a wet linen rag, or a moistened piece of cork. The gold will thus be deposited on, and adhere firmly to the silver. The remaining ashes are to be then washed off, and the surface of the silver, which does not appear gilt, is to be burnished with a blood-stone, till it acquires the colour of gold : this is an easy method of gilding trinkets, spoons, snuff-boxes, &c.

Glass, porcelain, &c., may be gilded by having gold-leaf laid on the surface, to which it will closely adhere, and then exposing the material so gilded to a certain degree of heat, and afterwards slightly burnishing it, to give it the requisite lustre.

The processes of gilding are, however, where acids, mercury, and many other minerals are employed, very injurious to health. Those, therefore, who are engaged in such occupations, should take care, that the place in which they work, is supplied with a constant current of pure air.

Gilead, balsam of. See BALSAM.

GILL, a measure of capacity, containing four ounces, or one-fourth of an English pint, wine measure.

Gilliflower, Clove. See PINK.

Gilliflower, Stock. See STOCK.

Gin. See GENEVA.

GINGER, or *Zingiber*, considered by some naturalists as a species of the *amomum*, a plant, native of the East Indies ; but is now naturalized to the West Indies, where it flowers in September. The root is perennial ; the stem is annual, and rises about three feet in height. The leaves are linear-lanceolate, smooth, and about six inches long. The herbaceous part of the plant withers in December, and the root is dug up in January. The different species of ginger found in the shops, appear, by the most accurate inquiry, to be the same root, differently dried, or otherwise prepared. *Preserved* ginger is prepared from the green roots, with a suit-

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able addition of syrup, or sugar : it is, when good, translucent.

Ginger is found in the shops under three distinct names, viz. the *Jamaica*, which is the whitest and said to be the best ; *Barbadoes* ; and *Black ginger* : the last is of the worst quality. Good ginger should be free from worm-holes, and, at the same time, compact and firm ; and, if white, certainly not woolly and light, nor very friable nor fibrous.

Ginger is stimulant, carminative, and sialogogue. It has been found useful in flatulent colic, dyspepsia, and tympanitis ; and in gout when it attacks the stomach. When chewed, ginger excites the salivary glands, and hence it has been found useful in relaxations of the uvula and tonsils ; and in paralysis of the tongue and fauces.

A tea made of ginger and drunk instead of common tea, is a very useful variety for dyspeptic patients, and may be continued daily, for a month or more.

The dose of powdered ginger may be from ten grains to one scruple.

A *Tincture of ginger* is ordered by the London College to be made thus : Take of ginger-root sliced one ounce ; of proof spirit one pint. Macerate for fourteen days, and filter.

This tincture may be given in atonic gout, when it attacks the stomach, in flatulent colic, and as a corrector of griping purgatives. The dose is from half a fluidrachm to two fluidrachms.

A *syrup of ginger* may be made thus : Take of ginger-root sliced one ounce ; boiling water half a pint ; refined sugar one pound. Macerate the ginger-root in the water for twelve hours, and strain ; then add the sugar so as to make a syrup,

This syrup is usefully added to bitter and tonic infusions ; and is also a convenient vehicle for forming bark and other substances into boluses, &c. The dose, if taken alone, is from one to two fluidrachms.

GINGER-BEER, a beer well known in the metropolis, and much drunk as a pleasant beverage, in con-

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sequence of its containing a considerable portion of carbonic acid. It too often, however, contains a portion of undecomposed sugar, and, in such state, is totally unfit for those who labour under dyspeptic complaints : for such, soda water is far preferable. See QUACK MEDICINES.

GINGER-BREAD, a sweet-meat, in which the taste of ginger is predominant. Ginger-bread, to those whose digestive faculties are good, may be convenient, especially in long journeys. But as it generally contains a quantity of unfermented materials, which, when eaten by the dyspeptic, go very soon into fermentation, it should be by them religiously avoided. More especially is that gingerbread pernicious which is covered with that imitation of gold called *Dutch metal*.

GINSENG, or *Panax*, in botany, a genus of plants consisting of nine species, natives of America, China, and Australasia. The cultivated species are as follow :

The *Quinquifolia*, which grows wild in North America, produces the roots known by the name of GINSENG in the shops. It was formerly in the materia medica, and considered as a grateful stomachic bitter, but is now laid aside. By the Chinese, however, it is said to be still regarded as a panacea, or universal medicine.

The *Trifolia*, or Three-leaved panax. The *Aculeata*, or Prickly panax.

The first two sorts are increased by sowing the seeds on a hot-bed ; the last by layers or cuttings.

GIRTHS, horse-swarths, made of woollen or linen web, and used for keeping the saddle in a proper position. To prevent galling, they should always be made of elastic, and not of tight wove web. Care should be taken that girths are of a suitable length, so that the buckles are not below the pad of the saddle : from inattention to this circumstance, warbles, sitfasts, and wounds, frequently ensue.

GIZZARD, the strong muscular stomach of birds.

Gladiole. See FLAG.

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Gladiolus. See IRIS.

GLAND, an organic part of the body, composed of blood-vessels, nerves, and absorbents, and destined for the secretion or alteration of some peculiar fluid. The glands of the human body are divided by anatomists into different classes, either according to their structure, or the fluid which they contain : simple, compound, conglobate, conglomerate, sebaceous, lymphatic, salival, and lacrymal glands. The liver is the largest gland in the human body.

GLANDERS, a contagious disease, which, as well as the farcy, is said to be peculiar to the horse, the ass, and the mule.

There are two kinds of glanders, the mild and the virulent, or the chronic and acute. The symptoms of mild glanders are, a discharge of matter from one or both nostrils, and a swelling of the glands, or kernels, under the jaw. Sometimes only one nostril, and the glands on the same side, are affected. The discharge has a glairy appearance, and sticks about the upper lip, and exterior part of the nostril. It is seldom so considerable as in strangles or violent colds ; nor is it of so white, or so cream-like a consistence, as in these diseases, or from an abscess. There is no cough, and the general health does not appear in any degree affected ; the horse feeds well, is lively, and continues in good condition. The disease often continues in this state a considerable time ; sometimes many years, particularly if the horse be not overworked, or badly fed.

When it attacks horses pent up in close hot stables, employed in violent exertion, and when over-heated, exposed to rain, and cold winds, the disease assumes a more formidable appearance ; hence it is, that in stage-coach, and post-horses, the virulent or acute glanders, sometimes accompanied by farcy, is most frequently met with. In addition to the discharge of the nostrils, and great enlargement of the gland of the under jaw, the inner parts of the nostrils are commonly ulcerated, the matter has sometimes an offensive

GLASS

smell, and is often mixed with blood, indicating the presence of ulcers in the higher parts of the nostrils. The flesh and strength of the animal falls off, respiration is often impeded, abscesses form in the lungs, and the horse dies.

The disease is sometimes preceded by languor, weakness, loss of flesh, a dry staring coat and tight skin. This may continue for two or three weeks before the actual presence of the disease is manifest, and the progress of which, afterwards, is generally very rapid.

Notwithstanding many medicines have been recommended for the cure of glanders, from every thing which we can learn, it must still be considered as a disease, with the cure of which we are not acquainted. But as it is unquestionably a disease which is communicable to healthy horses, by the contact of a diseased horse, whether it be affected with farcy or glanders, the obvious and most effectual mode of prevention consists in separating a suspected, or glandered horse, from others; and in being particularly careful that sound horses have no possible opportunities of swallowing glanderous matter, which may be dropped upon hay or corn, upon the litter, or in a trough of water, or upon the manger, or parts of the stable which horses are apt to lick. The most effectual way of purifying a glandered stable is to cleanse it thoroughly, and to fumigate it. See FUMIGATION.

GLASS, a transparent, solid, brittle, factitious body, produced by a mixture of earthy or metallic, with saline substances, melted together by an intense heat.

There are several kinds of glass, adapted to different uses. The best and most beautiful are flint, and plate-glass. These, when well made, are perfectly transparent and colourless, heavy and brilliant.

Glass is usually made in large establishments known under the name of glass-houses. The materials for making glass must first be reduced to powder, either in a mortar or horse-mill.

After sifting out the coarse parts, the proper proportions of flint, alkali, &c., are mixed together, and put into a calcining furnace, where they are kept in a moderate heat for five or six hours, being frequently stirred about during the process. When taken out, the matter is called *frit*. This is easily converted into glass by pounding it, and vitrifying it in the melting pots, or crucibles of the glass-furnace; the heat in which must be kept up until the glass is brought to a state of perfect fusion; and during this process, any scum which arises must be removed by ladles. When the glass is perfectly melted, the glass-blowers commence their operations.

The following forms for making glass, are esteemed good.

Best Flint Glass. Take 120lbs. of white sand; 50lbs. of red-lead; 40lbs. of the best pearl-ashes; 20lbs. of nitre; and five ounces of magnesia: if a pound or two of arsenic be added, the composition will fuse much quicker, and at a lower temperature.

A cheap flint-glass. Take 120lbs. of white sand; 35lbs. of pearl-ashes; 40lbs. of red-lead; 13lbs. of nitre; 6lbs. of arsenic; and four ounces of magnesia.

This requires longer heating; and the heat should be applied gradually, or the arsenic may sublime before the fusion commences. A glass may be made still cheaper by omitting the arsenic, and adding in its stead common salt.

Glass for looking-glass plates. Take of washed white sand 60lbs.; purified pearl-ashes 25lbs.; nitre 15lbs.; and of borax 7lbs. If properly managed, this glass will be colourless: should it not, a small quantity of arsenic or magnesia may be added.

Crown Glass. Take of white sand 60lbs.; of pearl-ashes 30lbs.; nitre 15lbs.; borax 1lb.; arsenic half a pound.

Green window-glass. Take of white sand 120lbs.; of unpurified pearl-ashes 30lbs.; of wood-ashes well burnt and sifted 60lbs.; of common salt 20lbs.; of arsenic 5lbs.

Green Bottle Glass. Take of wood-

GLASS.

ashes 200lbs.; of sand 100lbs.: or of wood-ashes 170lbs.; of sand 100lbs.; and of the lava of an iron furnace 50lbs.

It is scarcely necessary to observe, that all these different ingredients for the several glasses must be powdered and well mixed together.

Black bottle-glass is the coarsest and cheapest kind. It is composed of the ashes of kelp, with sand, or other siliceous matter. Or of sand and the refuse of the soap-boiler.

The most fusible is flint glass, and the least fusible is black bottle-glass.

Glass is often tinged of various colours; and with it are made many factitious gems.

It is tinged *Blue* by oxide of cobalt; *Violet* by oxide of manganese; *Green* by oxide of iron or copper; *Red* by a mixture of the oxides of copper and iron; *Purple* by an oxide of gold; *White* by the oxide of arsenic or zinc; *Yellow* by the oxide of silver, and by combustible bodies.

Glass-blowing, or the art of forming vessels of glass, is performed by the operator's taking a portion of the melted glass upon the end of a hollow iron tube, and blowing it, by applying the mouth to the other end, into a globe, rolling it, occasionally, on a marble slab, and afterwards, by a series of the most simple and dexterous operations, this beautiful material is wrought into various utensils of elegance and utility, by methods which require but very few tools, and those of the most simple construction. Even the glass of our windows, except that called plate glass, which is poured in a melted state upon a table covered with copper, and afterwards polished, is made by being first blown into a large globe, and by a few manipulations converted almost immediately into a circular plane.

Glass, after, it is formed into various vessels, must undergo the process of annealing, or it will break from the most trifling cause. See **ANNEALING**.

The uses of glass are innumerable, as well for convenience as for luxury.

The properties of glass are very remarkable. It is one of the most elastic

bodies in nature. When glass is suddenly cooled, it becomes exceedingly brittle; this brittleness is sometimes attended with surprising phenomena. Hollow bells made of unannealed glass, with a small hole in them, will fly to pieces by the heat of the hand, if the hole, by which the internal air communicates, be stopped by the finger. And it has lately been found that some vessels, made of such glass, have the remarkable property of resisting very hard strokes given from without, though they shiver to pieces by the shocks received from the fall of very minute bodies dropped in their cavities. These glasses may be made of any shape, but the thicker the bottom is the sooner they break. Glass also exhibits remarkable phenomena when formed into tubes, and laid before the fire in a horizontal position. Glass is less dilatable than metalline tubes, and solid glass sticks are less dilatable than glass tubes. Glass also appears to be more fit for the condensation of vapours than metallic substances. A drinking-glass, partly filled with water, and rubbed on the brim with a wet finger, yields musical notes, higher or lower, as the glass is more or less full, and will make the liquor frisk and leap about. Glass is also possessed of extraordinary electrical virtues.

The only acid which acts upon glass is the fluorie. See **FLUORIC ACID**.

Glass, or Enamel, in fine powder, may be swallowed without danger: but if swallowed in pointed morsels, they produce the same mischief as other pointed bodies, that of tearing and inflaming the stomach. In a case of this kind, a large quantity of beans, potatoes, cabbage, or crumb of bread must be given; by this means the stomach is filled and the glass enveloped; then two or three grains of emetic tartar are to be taken; by which vomiting may be caused, and the glass rejected. Milk in abundance is then to be drunk, and glysters may be given. The stomach should also be fomented; and if practicable, the patient should be placed in a warm bath. If the inflammation of

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the stomach be great, twelve or fifteen leeches must be applied.

Large pieces of glass will sometimes remain in various parts of the human body, with comparatively little injury or inconvenience, for years. A piece of window glass, above one inch long, and a quarter of an inch wide, driven by accident between two of the bones of the hand, the very hand which now writes this, remained between them for more than two years, having entered by the palm, and come out at the back of the hand.

Glass is subject to various excise duties, and glass-makers must take out an annual license, paying for every glass-house £20 per annum.

Glass, Burning. See BURNING-GLASS.

Glass, Cupping. See CUPPING-GLASS.

Glass-wort. See KALI.

Glastonbury Thorn. See THORN.

GLAUBER'S SALT, or **SULPHATE OF SODA**, a well-known purging salt, first prepared by **GLAUBER**, a celebrated chemist of the 17th century. It consists of soda and the sulphuric acid. It is sometimes found native, in combination with oxide of iron, and muriate and carbonate of soda; on the surface of the soil in the neighbourhood of salt lakes in Hungary; and very often forms part of the contents of mineral saline springs, as those of Cheltenham and Carlsbad. But the greater part used in this country is artificially prepared. The salt left after the preparation of muriatic acid from common salt, and the sulphuric acid, is sulphate of soda, requiring only to be dissolved in water, boiled down to a certain strength, filtered, and set by, in proper vessels, to crystallize. Most of the Glauber's salt found in Great Britain is obtained by such process.

The taste of this salt is, at first, simply saline, but afterwards disagreeably bitter. It is a very common and useful purgative, and where a diminished action of the heart and arteries is desired, it will effectuate that object, perhaps, sooner than almost any other evacuant,

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blood-letting excepted. Physicians do not, however, often prescribe it. The dose is from half an ounce to two ounces; but the most common dose for an adult is one ounce. When taken in a dried or efflorescent state, the dose must be, of course, diminished; generally one half. None of its medical qualities are lost by its becoming dry and powdery, the water of crystallization only having escaped.

The dose of this medicine for a purge for a Horse, is from one pound to one pound and a half: cattle may be purged by twelve or sixteen ounces.

GLAZING, in the arts, is the polishing or crusting over earthenware.

Most of the common earthenware in this country is glazed with a composition into which lead enters, and hence, this kind of glazing is liable to be attacked by acids, and of acting, in some degree, as a poison. No acids should, therefore, be put into such vessels. To obviate this deleterious inconvenience, a substitute has been recommended, consisting of equal parts of white glass and soda, finely pulverized, and exposed to a strong heat till quite dry, and with which the vessels are varnished or glazed. The following preparations have been also recommended for glazing earthenware, instead of the preparations of lead.

Take 32 parts of sand, 11, 15, or 20 of purified potash, and from 3 to 5 parts of borax.—Take 32 parts of green glass, 16 parts of borax, and three parts of pure potash.—Take 150 parts of crystallized Glauber's salt, 8 parts of powdered charcoal, previously roasted, till of a grey colour, 16 parts of sand, and 8 of borax.—Take of nitre and potash, each half a pound, of common salt one pound. This last is not very expensive, and will produce an enamel not inferior to that prepared with lead.

GLEANNING, or **LEASING**, as it is called in some districts of the kingdom, is the gathering, or picking up those ears of corn which are left after the field has been reaped, and the crop carried home.

Gleaning was formerly an employ-

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ment in which the children and females of the poor were not only agreeably but beneficially engaged, particularly when it was confined, as it generally was, to the inhabitants of the immediate neighbourhood. But it has, by the most recent cases in our courts of law, been declared illegal.

Gleet. See GONORRHEA.

Glist. See CLYSTER.

GLOBE AMARANTHUS, or *Gomphrena*, in botany, a genus consisting of ten species, scattered over the warm climates of Asia, Africa, and America. The only species in common cultivation in our gardens is the *Globosa*, of which there are two varieties, one with a large head of fine bright purple flowers; the other with a head of white, or silvery hued. Both are propagated by seeds, which should be sown on a hot-bed the beginning of March. When the plants are half an inch high they should be removed into a fresh hot-bed, placed four inches apart, and shaded till they have taken root; being gently watered, and having fresh air daily, according to the warmth of the season. In a month pots of light earth should be plunged into a fresh hot-bed, and when the bed is of a proper temperature, the plants must be carefully taken up, with balls of earth to the roots, and each planted in a separate pot, shading them as before. When the plants have filled these pots with their roots, they should be taken out, the roots carefully pared off outside the ball of earth, and be put in pots of a larger size. In July they should be gradually brought to bear the open air, into which they may be removed about the middle of the month, when they may be intermixed with other annuals to adorn the pleasure-garden.

The other species of this genus are all so tender that they seldom perfect their seeds in England.

GLOBE THISTLE, or *Echinops*, a genus of plants comprising six species, natives of the Levant, or the south of Europe. Some are annual, others perennial.

GLOBUS HYSTERICUS, in medicine, the air rising in the oesophagus,

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and prevented by spasm from escaping by the mouth; it is so called because it mostly attends hysterical complaints, and produces the sensation of a ball ascending the throat.

GLORY, one of the most indefinite words in the English language, and one which has done, and is calculated to do, an infinity of mischief to the human mind. It is a word, however, which the virtuous and the wise will always employ with very great caution, if at all. Glory is too often a sort of popular *parole*, adopted to impose upon the imbecile and the unthinking. He who is anxiously concerned, and acts for the welfare of his fellow men, neither desires nor asks the inflated homage which such a word is often used to convey.

GLOTTIS, the superior opening of the larynx at the bottom of the tongue.

GLOVE, a covering for the hand and wrist, used both for warmth and decency. Gloves are made of leather, silk, thread, cotton, and worsted: if desired for warmth, the last are the best; but leather gloves lined with fleecy hosiery answer the purpose very well.

Glow-worm. See FIRE-FLY.

GLUE, among artificers a tenacious viscid substance, serving as a cement to bind or connect things together, particularly pieces of wood.

Glue may be manufactured from the skins, but is more commonly obtained from the parings of hides, or horns of various kinds of animals, the felts obtained from the furriers, the hoof and ears of horses, oxen, calves, sheep, &c. They are first cleaned by being digested in lime water; then boiled in water, with the addition of alum or lime, to cleanse them yet more; the mass is then strained through baskets, and suffered to settle still further to purify it; it is then returned to the kettle, and boiled till it becomes of a clear darkish brown colour. When it is sufficiently thickened by boiling, it is poured into frames or moulds, where it gradually hardens as it cools, and is cut out, when cool, into square cakes; each of which is after-

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wards cut into slices, by an instrument like a bow, with a brass wire for its string. These slices are dried on nets, fixed on frames with wooden coverings in the open air. Good glue is of a clear dark yellow, or reddish colour, and free from all cloudy, or black spots. The best glue is made in England; an inferior sort is brought from Ireland.

To prepare glue for use, set a pint of water on the fire, put in about four ounces of glue broken in pieces; boil them gently together till the glue is dissolved, and of a due consistence. When it is used, it must be made thoroughly hot: after which, with a brush dipped in it, besmear the faces of the joints as quick as possible; then put them together, and slide or rub them lengthwise, one upon the other, two or three times, to settle them close: let them stand till they are dry and firm. See **GELATINE**.

GLUTEN, a substance existing in many vegetables, but in very large quantity in wheat. If wheat-flour be formed into a paste with water, and afterwards washed in a small stream of that fluid, till all the starch be disengaged, a tough elastic substance remains, which is gluten. Its colour is grey; when dried it becomes brown, and brittle. It is nearly insoluble in water, in alcohol, and in ether. When allowed to putrify, it emits an offensive odour. It yields by destructive distillation, ammonia, and is in other respects similar to the animal principle called albumen; hence it has been termed vegetable albumen. Most of the acids and the alkalis dissolve it.

Gluten is an essential ingredient in wheat-flour, contributing much to its nutritive quality, and renders it peculiarly fit for making bread.

A substance resembling gluten has been found in the juice of certain vegetables, especially those which are milky, and coagulable by acids. It is contained in the sap of the houseleek, of the cabbage, and most of the cruciform plants.

Caoutchouc, and birdlime, may also

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be considered as closely allied to gluten. See **BIRDLIME**, and **INDIAN-RUBBER**.

GLUTTONY, a voracity of appetite, or a propensity to gormandizing. A voracious appetite is, no doubt, sometimes, a bodily disease, and in such cases, requires regimen and regulation of diet for its removal. See **HUNGER INSATIABLE**. But that gluttony which is more within the province of the understanding, and which may be avoided by suitable care, although intoxication is not its attendant, is reprehensible; not only because it is wasteful, but because sooner or later, disease will be found in its train.

Some die
By fire, flood, famine, by intemperance more
In food or drink.

MILTON.

GLUCINE, one of the earths. It is white and insipid; its specific gravity is 2.97. It dissolves in caustic, potash, and soda. It forms saline compounds, with the acids, of a sweetish astringent taste. It exists in the beryl and the emerald. Its uses are little known.

GNAT, or *Culex*, in zoology, a genus of insects, consisting of fourteen species, scattered over the globe. These insects live by sucking out the blood and juices of larger animals, and in turn are eagerly sought after by poultry and sparrows. The larvæ are hatched and reside in stagnant waters. The following are the most remarkable:

The *Pipiens*, of an ash-colour, inhabiting Europe, and every where known by its shrill buzzing noise, and severe puncture. It is said sometimes to shine by night. Most frequent in England, in swampy and marshy districts. In the savannahs of warmer climates, a much larger species is found, known by the name of *musquito*, which inflicts so severe a wound, that the inhabitants are obliged to sleep under thin gauze nets.

The *Hæmorrhoidalis*, is brown, with white wings, and three legs; inhabits Cayenne, the largest of the genus.

The *Pulicaris*, is also brown with

white wings, smaller than the common gnat. Inhabits Europe.

The *Reptans*, is black, with hyaline wings and black legs, with a white ring. Inhabits Europe, and is particularly troublesome in marshy districts, during the evening, by its creeping motion on the skin of the face or body.

The best remedy for the stings of gnats, is a mixture of two parts olive-oil, and one of solution of ammonia, rubbed on the part occasionally. If a person has been stung by many gnats, so as to occasion a degree of fever, four or five drops of solution of sub-carbonate of ammonia in a little orange flower water, should be given every fifteen minutes.

GNEISS, a species of rock, closely allied to granite, and usually associated with it. It is composed of the same materials as granite, but lathy in its fracture; it is hard, not melting before the blow-pipe, nor mouldering in the air. Found in primitive mountains.

GOAT, or *Capra*, a genus of quadrupeds, having the horns hollow, compressed, rough, erect, and turned back; fore-teeth eight, in the under jaw; none in the upper; tuskless; chin bearded. The animals of this genus are fond of dry rocky situations, and feed on aromatic vegetables: have hair instead of wool; exhale a rank odour; are shy and timid; fight erect on their hind legs, and strike with the head turned on one side. It is a singular local peculiarity, that in Angora only, the animals of the goat, sheep, and hare genera, have long, soft, silky hair. There are three species of this genus, as follow:

The *Ægagrus*, of which there are the following varieties: Caucasian goat; Domestic goat; Angora goat; Syrian goat; African goat; Whidaw goat; and Capricorn.

This species inhabits many mountainous parts of Europe, Africa, Persia, and India. Active like deer, and resembling them in habits; horns of the male dark brown-ash; of the female, either small or none. The stomach produces frequently, bezoard. The

Domestic goat is found throughout Europe; it feeds on bushes and shrubs, lichens, and even hemlock; is seldom destitute of horns; treacherous, petulant, active, and lascivious; gravid five months; produces one or two, rarely more, at a time; lives from ten to twelve years. The flesh is hard, and not very desirable as food: that of the kid is, however, tolerably good. Goat's milk is said to be a good substitute for that of ass's, when drunk medicinally. The fat is similar to mutton suet. The hair and skin are used for various purposes in the arts. The skin of the kid makes excellent gloves. An opinion is prevalent that goats kept in stables, prevents the staggers in horses: we think, however, that this may be doubted.

The *Ibex*. The horns of the *Ibex* are sometimes three feet long, knotty above, reclined on the back; the head short; snout thick and compressed; the eyes small, limbs slender, and tail short; the hair long, tawny, or hoary. Inhabits inaccessible precipices of Kam-schatka, Arabia, and Europe; gregarious, active, wild; larger than the common goat; produces one or two kids. Flesh good. When closely pursued will, it is affirmed, throw itself down precipices with its horns foremost and escape unhurt.

The *Caucasica*, or Caucasian goat, has the horns turned backwards and outwards, in colour dark grey: the male darker than the female; body above, brownish-grey, beneath, whitish; extremities black; hair hard, stiff, intermixed with grey wool. Inhabits Mount Caucasus; size of the common goat, but broader and shorter.

GOAT'S-BEARD, or *Tragopogon*, a genus of plants, consisting of twelve species, scattered over the globe. The following are cultivated: the *parifolius*, Purple goat's-beard, or Salsaly; the *pratensis*, or Common yellow goat's-beard, or Go-to-bed at noon; the *crocifolius* or Crocus-leaved goat's-beard; the *dalachampii*, or Great flowered goat's-beard. The young stems of the second sort, which grow wild in

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our meadows, are eaten like asparagus, and are a pleasant and wholesome food. The root is also excellent ; it was formerly used medicinally, as a diuretic.

GOAT-SUCKER, or *Cuprimulgus*, in zoology, a genus of birds, consisting of nineteen species. The bill of this genus is slightly curved and very small ; the mouth extremely wide, and furnished at the sides with a series of bristles. The birds of this family seldom appear in the day time, unless when disturbed, or in dark cloudy weather ; but wander about in the evening in search of insects. They lay two eggs, which they deposit on the naked ground. The following are the chief :

The *Europæus*, or European goat-sucker ; black, varied with ash-colour, brown, ferruginous and white ; beneath reddish-white, with brown bands. Inhabits Europe, Asia, and Africa ; during summer frequents the woods of England ; ten and a half inches long ; feeds chiefly on beetles and moths. Its note is singular, resembling the noise made by a large spinning-wheel. It was formerly absurdly accused of sucking the teats of goats, whence its name. Eggs whitish, marked with blueish-brown.

The *Virginianus*, or Virginian goat-sucker ; brown, transversely varied with grey brown, and a little ash-colour ; beneath, reddish-white. Inhabits North America ; makes a disagreeable, loud noise ; eggs green, with dusky spots and streaks.

The *Carolinensis*, inhabiting North America ; the *Griseus* ; the *Grandis*, nearly two feet long, with a mouth so large as readily to admit a man's fist ; the *Albicollis* ; the *Rufus* ; the *Semicorquatus*, and the *Cayennensis* ; all inhabitants of Cayenne ; the *Jamaicensis* ; and the *Americanus*, inhabiting Jamaica ; the *Guaianensis* ; and the *Acutus*, both of Guiana ; the *Torquatus* ; and the *Brasilianus*, of Brasil ; the *Asiaticus* and *Indicus*, of India ; the *Novæ Hollandiæ* of New Holland ; and the *Longipennis* of Sierra Leone, make up the tribe.

Goat's thorn. See MILK-VETCH.

GOD

GOBY, or *Gobius*, a genus of fishes, consisting of twenty-five species, chiefly natives of European and Asiatic, and a few of American seas. They live chiefly under stones ; feed on worms, insects, and the spawn of other fishes. Head, mouth, and body small ; jaws armed with small sharp teeth ; they adhere firmly to rocks by the funnel-shaped ventral fins. The following are the chief : The *Niger*, Black, or common goby, inhabiting the European seas ; from five to six inches long ; body deep brown, or whitish, with deep brown or yellow spots ; flesh very good. The *Jozo*, flesh hardly eatable. The *Schlosseri*, inhabiting the lakes of Ambona ; very fat ; about nine inches long. The *Lanceolatus*, inhabiting the brooks and rivers of Martinico ; flesh good.

GODFREY'S CORDIAL, a quack medicine, well known in the nursery. It is made thus : Take of aniseeds, caraway-seeds, and coriander-seeds, of each bruised, three ounces ; of sassafras-bark bruised, one ounce. Place these ingredients in a copper still, with a sufficient quantity of water to prevent burning, and draw off by distillation, three pints. Then add of opium, previously dissolved by the addition of heat, in four ounces of the distilled water, one drachm and a half. To the mixture add two pounds of treacle, and half a pint of rectified spirits of wine. Lastly shake the whole well together ; but it should neither be filtered nor made fine by any process, as part of its qualities would be thereby destroyed. The dissolved opium may be merely passed through a hair sieve.

For the convenience of those persons who have no still, the following form for making this medicine will be useful : Take of essential oil of aniseeds, and caraway-seeds, of each one fluidrachm and a half ; of the essential oil of sassafras, fifteen drops : dissolve these in half a pint of rectified spirits of wine ; then mix the solution with two pounds of treacle, to which add three pints of water, and one drachm and a half of opium, dissolved by heat in a

GOLD

portion of the water. Lastly shake the whole well together.

Godfrey's cordial has been long in use as a soothing carminative in complaints of the bowels of very young children. It is also, we fear, often given too indiscriminately by idle nurses, who prefer the stupor and quiet which its exhibition is calculated to produce, to that dandling, exercise, and care which are so essential to preserve children in good health. That it is a useful medicine, when given in considerable relaxation of the bowels, there can be no doubt; but in many instances where acidity is present it should be combined with magnesia.

The dose for a child of one year old, is a large tea-spoonful; half a tea-spoonful for one half a year old, and a diminished dose of course for still younger children. If taken by adults, the dose may be two table spoonfuls. The bottle should always be shaken before it is poured out.

Godwit. See CURLEW.

GOLD, or *Aurum*, a metal of a reddish yellow colour, not tarnished by air, softish, and very tenacious; not sonorous, but exceedingly malleable and ductile. Its specific gravity is 19.3, being the heaviest of all metals except Platina. It has no perceptible taste or smell.

Gold occurs in a metallic state alloyed with a little silver or copper: in this state it is called *native gold*. Its colour is various shades of yellow; its forms massive, ramose, and crystallized in cubes and octoedra. Twelve species have been described, the following are the chief: the *naivium*, the *arenarium*, the *argentiferum*, and the *pyriticorum*. The veins of gold are confined to primitive countries; but large quantities of this metal are collected in alluvial soils, and in the beds of certain rivers, more especially those on the west coast of Africa, and of Peru, Brazil, and Mexico. In Europe the streams of Hungary and Transylvania have afforded gold; so have also the Rhine, the Rhone, and the Danube. Small quantities have been collected in Cornwall, and in the

county of Wicklow in Ireland. The largest lump of native gold ever known, was obtained from the last place, it weighed 22 ounces, and contained in 24 parts of fine gold, $21\frac{6}{7}$; of fine silver $1\frac{2}{3}$; and of copper and iron alloy $\frac{2}{3}$.

Gold melts at a bright red heat, and, when in fusion, appears of a brilliant green colour. It shows no tendency to unite to oxygen when exposed to its action in a state of fusion; but if an electric discharge be passed through a very fine wire of gold, a purple powder is produced, which has been considered as an oxide. It is so malleable that it may be extended into leaves which do not exceed $\frac{1}{100,000}$ of an inch in thickness. It is also so ductile that an ounce of gold upon silver wire is capable of being extended more than 1300 miles; and so great is its tenacity, that a gold wire 0.78 of an inch in diameter, is able to support a weight of 15,007 pounds avoirdupoise without breaking.

The true solvents of gold are a solution of chlorine and nitro-muriatic acid: the latter is usually employed. See *AQUA REGIA*. By evaporation the saturated solution affords prismatic crystals of *muriate of gold*. These solutions are of a yellow colour; they tinge the skin deep yellow, which becomes purple by exposure; they afford a precipitate of a purple colour with *muriate of tin*, which has been called *purple of Cassius*; sulphate of iron produces a greenish brown precipitate of finely-divided metallic gold; the fixed alkalis throw down oxide of gold; and ammonia furnishes a yellow precipitate of *fulminating gold*. If a solution of *muriate of gold* be mixed with sulphuric ether, it combines with the oxide, and an *ethereal solution of gold* is obtained. Polished steel dipped into this solution acquires a gold coat, and it has hence been employed for gilding delicate cutting instruments. See *GILDING*.

The uses of gold are almost innumerable. As coin in its pure state it has been found too soft: a mixture of copper renders it much more hard, and

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less liable to loss by friction. Gold coin is an alloy of eleven parts of gold and one of copper; of this alloy twenty troy pounds are coined into 934 sovereigns, and one half sovereign; one pound used to produce $44\frac{1}{2}$ guineas; it now produces $46\frac{2}{3}$ sovereigns.

A very curious detail of an extended and accurate series of experiments upon the alloys of gold has been published in the Philosophical Transactions for 1803, by Mr. Hatchett.

Mercury and gold combine with great ease, and produce a white amalgam much used in gilding. For this purpose the amalgam is applied to the surface of the silver; the mercury is then driven off by heat, and the gold remains adhering to the silver, and is burnished. This process is called water gilding.

In gilding porcelain, *gold powder* is generally employed, obtained from the decomposition of the muriate; it is applied with a pencil, and burnished after it has been exposed to the heat of the porcelain furnace.

Various methods have been devised for determining the fineness of gold, or the proportion of alloy which it contains. For this purpose touch-needles and touch-stones are employed. The most usual stones for this test are black basaltes; flint, or potter's ware, of a black colour, may be employed with equal advantage. But weighing the metal is the most certain criterion. A liquid test for ascertaining the purity of gold and silver, has been long known in commerce by the name of ALSTON'S TEST. See RICHES.

Gold-cup. See CROW-FOOT.

Goldfinch. See FINCH.

Gold fish. See CARP.

GOLD OF PLEASURE, COMMON CAMLINE, MADWORT, or *Alyssum*, a genus of plants consisting of thirty-three species, chiefly inhabitants of Europe. The *sativum*, or Common Madwort, is found wild in our own corn-fields, flowering in June. The seeds afford an oil which may be used as a lamp oil. Cattle relish the plant, and geese and other poultry the seeds.

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GOLDEN ROD, or *Solidago*, a genus of plants consisting of thirty-eight species, with a few exceptions, natives of North America; one only, the *virgaurea*, common to our own woods. This, called the common golden rod, and sometimes Aaron's rod, and wound wort, is a native of Europe and Japan, as well as indigenous to our own country. It is a perennial plant, flowering from July to September. The stem is from ten inches to three feet in height, the flowers yellow. The leaves are said to be astringent and lithontriptic, but they are in truth of little importance. The dose of the powdered leaves and flowers may be from ten grains to one drachm, or more.

The *Canadensis*, or Canadian golden-rod; the *altissimus*, or Tall golden-rod; the *mexicana*, or Mexican golden-rod; the *viminea*, or Twiggy golden-rod; the *bicolor*, or Two-coloured golden-rod; the *rigida*, or Hard-leaved golden-rod; the *coesia*, or Maryland golden-rod; the *flexicaulis*, or Crooked-stalked golden-rod; and the *simpervirens*, or Narrow-leaved evergreen rod, are all readily increased by slipping or parting the roots, and planting them out in the autumn or winter, soon after the stems decay, or very early in the spring before they begin to shoot.

GOLD-SIZE, a kind of paint used for the purpose of gilding, &c. prepared by levigating Oxford ochre in powder, with linseed oil, particularly that which is grown thick by age. To use this size, it must be laid on thinly, of the shape of the gold letters, or figures, &c. intended to be made, with a fine brush or pencil; and as soon as it becomes dry enough not to soil the fingers, having at such period a peculiarly adhesive feel, the gold leaf is to be laid on it: they thus dry together, and are not easily rubbed off.

GONORRHOEA, a preternatural flux, from the urethra in men, or of the vagina in women. It arises, most commonly, from the action of the venereal virus on those parts, producing first an itching, afterwards a discharge like pus, attended with heat on making wa-

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ter, and, in men, is occasionally accompanied with phymosis, and sometimes paraphymosis. When this disease arises from venereal virus it is called *impura*, or virulent gonorrhœa; when from other causes, *spuria*, or spurious gonorrhœa.

The first symptoms of the virulent gonorrhœa in men, are, commonly, a sensation at the end of the penis, not unlike a flea-bite, together with a fullness of the lips of the urethra, and some degree of tension in the penis, the urinary canal feeling as if tightened, and the urine flowing in a small, unequal stream; a little whitish mucus is to be seen about the orifice of the urethra, and oozing from it when lightly pressed. The discharge soon increases in quantity, and varies in its colour according to the degree of inflammation. A sensation of heat and pain is felt in evacuating the urine, and involuntary erections, particularly when in bed, occasion a distortion or curvature of the penis, attended with exquisite pain. In extreme cases the glans penis is tumid and transparent, the perinæum is swollen, and even the loins, buttocks, and anus, sympathize, and afford a very uneasy sensation.

In mild cases the seat of the disease is in the urethra, not far from its orifice; but in more severe ones, Cowper's glands, the prostate, and parts very near to the neck of the bladder are affected.

In the generality of cases, the disease goes on increasing for several days, commonly for a week or fortnight; after which the symptoms abate, and the running, when left to itself, gradually lessens, and becomes whiter and thicker, till at length it totally stops; the colour of the mucus is, however, by no means a certain guide: for in many patients it is of a yellowish or greenish hue to the last.

In females the disease is less complicated than in men: sometimes the vagina only is affected; the symptoms in such cases are very trifling; but it comes on, in general, as in men, with a sensation of itching and heat, attended with inflammation of the *nymphæ*, inside of

the *labia*, *clitoris*, *carunculae*, *myrtiformes*, the orifice, and sometimes the whole of the *meatus urinarius*. The deep-seated glands of the vagina are sometimes affected; and it is then difficult to distinguish the discharge from that of *fluor albus*. See FLUOR ALBUS.

It is not with certainty known whether the virus of *gonorrhœa impura* and of *sypilis* be the same, but certain it is, that in nineteen cases out of twenty of gonorrhœa, no symptom whatever of sypilis appears. (See SYPHILIS.) The cure, or rather prevention of gonorrhœa, may be most certainly and most easily accomplished by a careful lotion of the parts to which contagious matter has any chance of being applied. These parts, at least on the first application of the matter, are readily accessible: for even in men, there is no reason to believe that it at first penetrates to any extent in the urethra. The washing of the parts should be performed as soon as possible; and if not performed at an early period, it should not be neglected afterwards, as it may, even at a later period, prevent the disease. Pure water is a very good lotion; a better one is soap and water; injections in the first stage of the disease, are not, in general, necessary; but a detergent injection may sometimes be used as a prophylactic, before the symptoms of infection have made their appearance: great circumspection is, however, necessary in the use of it. But a cooling regimen, and spare diet, with mild purgatives, such as sulphate of magnesia, or tartrate of soda, are absolutely necessary whilst any inflammation is present. Every thing which tends to excite the venereal imagination, or promote the erection of the penis, should be carefully avoided. For the same reason much walking, or riding on horseback, will be hurtful, or indeed violent exercise of any kind. Linseed tea, orgeat, whey, milk and water, almond emulsion, &c., will be found useful. A solution of gum Arabic, or gum tragacanth, in water, will be also useful; but nitre, although sometimes recommended, should be avoided.

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After the inflammation has subsided, gentle, stimulating, and astringent injections may be used with safety, and with considerable advantage. The great aim, therefore, in the use of injections should be, to use first those only which tend to lubricate the surface of the urethra, and to counteract and destroy the stimulus of the virus. The following injections, according to circumstances, are well recommended. Take of alum four grains; of rose water four ounces. Mix them. In this, and others for gonorrhœa, the proportion of active materials is to be varied according to circumstances, especially in females, who will bear much more powerful remedies of this kind than men. Another injection may be made with four ounces of mucilage of quince-seed, and half a drachm of calomel;—or a mucilage of gum Arabic, with calomel, may be employed in the same proportions; or ten grains of sulphate of zinc dissolved in four ounces of water, may sometimes prove a useful injection.

When the infection is slight, and the inflammation trifling, the cure may, in general, be completed without mercury, but when the disease is severe, the most prudent plan is to give mercurials in small doses, adapted to the constitution of the patient. The mercurial pill, or as it is more commonly called, from its colour, the *blue pill*, seems the best for this purpose. It may be given from six to eight grains, or two pills every day, care being taken that it does not affect the mouth nor pass off by stool. Or calomel may be given from one and a half to three grains at bed-time, made into a pill with crumb of bread and gum Arabic, occasionally interposing a mild purgative, to prevent salivation.

In the more severe forms of this disease, a medical practitioner should, by all means, be consulted: indeed, the ignorant and inexperienced should not attempt the cure of it in any stage.

After the gonorrhœa proceeding from venereal causes has been removed, another kind of running, without pain, called *gonorrhœa mucosa*, or GLEET,

sometimes remains. This arises either from a constriction and excoriation of the urethra, or frequently is the effect of a diseased prostate. The cure depends on the removal of the local disease, by which it is occasioned.

But another species of gleet seems to depend on relaxation. It is in general free from infection, and is found most common in those who have had long and frequent gonorrhœas. It is likewise, often, the effect of a debilitated habit, severe purging, or continued use of mercurials. Such discharge is more frequent in women than in men. When there is reason to suspect remaining contagion, astringent injections will be of the greatest service. At the same time, attention to the general health is particularly necessary. The Peruvian bark, chalybeates, &c., will also be of use. Where there is no tendency to inflammation, the balsam of capivi injection, as mentioned under FLUOR ALBUS, may be beneficially employed. A blister to the *perineum*, or the *os sacrum*, has sometimes cured this disease.

The SPURIOUS GONORRHOEA, is a very troublesome, and, we had almost said, incurable disease. It is distinguished by a purulent discharge, of a whitish colour, from minute exuberations around the *corona glandis penis* in men, and on the *nymphæ pudendorum* of females; in both cases preceded for a day or two by heat, swelling and itching of the part; exciting sometimes that mental affection which, in females, has been called *furor uterinus*. It occurs in subjects otherwise the most healthy, and has no connexion whatever either with the virulent gonorrhœa, or syphilis. The only thing which can be done, is, in both male and female subjects, to keep the parts clean with warm milk and water, or with warm water alone. Pregnant females are said to be particularly liable to this disease; and it is also said that it has been sometimes communicated by married females to their husbands, when both have led the most correct and chaste lives; from

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our own experience we have reason to believe this last assertion to be true. The complaint very rarely requires medical attention.

GOOD, that which either physically or mentally contributes to our happiness. The *supreme good* is said to be that which renders men truly and completely happy. Notwithstanding the reasonings of the metaphysician and the divine, we fear that the *summum bonum* has not yet been, perhaps never will be, found on earth. That, however, men may be, generally, much more happy than they are, we cannot for a moment doubt : nor, when we

Call to mind what high capacious powers
Lie folded up in man,

can we doubt that much of his happiness depends upon the assiduity with which he cultivates those benevolent affections, the possession and practice of which only can make him good and great.

Good Breeding. See **BREEDING**, **GOON**.

GOODIA, a genus consisting of one species, the *Lotifolia*, or Lotus-leaved Goodia, a native of New South Wales. It is a hardy, handsome, green-house plant, flowering in May, June, and July, and is propagated by seeds and cuttings.

GOOSE, or *Anas anser*, a well known species of the genus **DUCK**, consisting of two varieties, as follow :

The *Ferus*. Grey lag, or wild goose, is two feet nine inches long ; the bill is large and elevated, of a flesh colour, tinged with yellow. The head and neck ash-colour ; breast and belly whiteish, clouded with grey or ash-colour ; back grey ; legs flesh-colour. They reside in the fens the whole year ; breed there, and hatch about eight or nine young ; they are often taken, and easily tamed. Towards winter they collect in great flocks. They are migratory on the continent, and also in some parts of England. They generally, when in flocks, fly in the form of a triangle. They have not the superiority of the wild duck, tasting, frequently,

of fish ; the flesh is not, therefore, equal to that of the tame goose when properly fed.

The *Mansuetus*, or tame goose, is the grey lag in a state of domestication, and from which it varies in colour, but still more or less verging to grey. It is frequently found white, especially the males. The goose, in general, breeds only once a year ; but frequently has two broods in a season, if well kept. It is said to be very long lived ; some have attained the age of 100 years. The goose is naturally about 14 or 16 pounds weight, but by art its weight may be increased to 28 or even 30lbs. The best geese in England are said to be found in Norfolk, Suffolk, and Berkshire.

A gander and five geese comprise a single breeding stock. The goose sits upon her eggs from twenty-seven to thirty days, and will cover from eleven to fifteen eggs. A nest should be prepared for her, in a secure place, as soon as carrying straw in her bill, and other tokens indicate her readiness to lay. The earliness and warmth of the spring are the general causes of the early laying of geese, to which may be added, feeding them throughout the winter with solid corn ; and, on the commencement of the breeding season, allowing them boiled barley, malt, fresh grains, fine pollard mixed up with ale, and other stimulants. By such means, two broods may be sometimes obtained in one season ; this, however, is not a common occurrence.

With a good gander present, no mischief can happen to the sitting geese without extraordinary alarm, he being centinel at the chamber door of his wives. The goose need not be fed during her incubation. She does not quit her nest until the hatching is completed ; nor is it very practicable or necessary to take any of the goslings from her. When the goslings are hatched, they should be penned with the goose between four hurdles, on a dry piece of grass, well sheltered ; putting them out late in the morning, or not at all in severe weather, and always taking them

in early in the evening. Two broods may even be placed together without danger, as geese do not quarrel like the gallinaceous fowls. The *first food* shou! be the same as for the Duck, but with the addition of greens, such as clivers, or the like, intermixed—namely barley-meal, bruised oats, or fine pol-lard.

For the *first range*, a convenient field, containing water, is preferable to an extensive common. It is also necessary to destroy all the *hemlock*, or *deadly night-shade*, within the range of the young geese, many of which die from swallowing these poisons; slips of *yew* have also occasionally killed both young and old geese. Although young geese, if allowed sufficient range, will require no other support, yet in order to obtain them in good condition as green geese, it is advisable to give them corn morning and evening, with greens, such as cabbage, mangel-wurtzel leaves, lucerne, tares, and occasionally sliced carrots: and, if care be taken with geese in the autumn, they will fatten better by this process than by any forcing whatever. Equal quantities of rye and pease-meal, mixed with skim milk, forms an excellent feeding both for ducks and geese.

The flesh of geese, as food, requires the most healthy stomach to digest it.

The time of *plucking* geese is about the beginning of April; when the fine feathers of their breasts and backs should be gently and carefully plucked; care must be taken not to pull or interrupt their down, or pen-feathers. The quills should be plucked five out of each wing. They will bear pulling in thirteen or fourteen weeks again, or twice a year; the feathers three times a year, of the old geese and ganders: seven weeks from each pulling. The young geese may be pulled once at thirteen or fourteen weeks old, but not quilled. In some parts of England geese are plucked five times a year. It is to be lamented that interest and cupidity should tempt persons to adopt so barbarous a practice.

GOOSE-FOOT, WILD ORACH, or

Chenopodium, a genus of plants consisting of twenty-six species, scattered over the globe, the greater number of which are, however, common to our own country, and found on dunghills, rubbish, road-sides, or salt-marshes. The chief are, the *bonus henricus*, or English mercury, formerly in the materia medica, but of no importance whatever; the *botrys*, or Jerusalem oak;—the *ambrosioides*, or Mexican tea-plant;—the *olidum*, or Stinking orach, found on our own road-sides; and the *anthelminticum*, or Vermifuge chenopody, a native of Pennsylvania, and formerly used for destroying worms.

Goose-grass. See CLIVERS.

GOOSEBERRY, or *Ribes*, a tree and fruit well known, consisting of several species of that genus comprehending both the currant and gooseberry. The following are cultivated:

The *Grossularia*, or rough-fruited gooseberry. Its colours and varieties are numerous. It is found wild in our hedges.

The *Uva crispa*, or Smooth-fruited gooseberry. The varieties of this are also numerous, from differences of colour; and like the last, grows wild in our hedges.

The *Reclinatum*, or Procumbent gooseberry. When ripe, the fruit is usually of a dark purple, but sometimes red, or even yellow. A native of Germany.

The gooseberry is propagated either by suckers or cuttings, but the latter method is preferable. The best season for planting the cuttings is in February, just before the buds begin to open; observing always to pick them from the handsomest shoots, and from such branches as produce the greatest quantity of fruit. The cuttings should be about eight inches long, and be planted in a bed of light earth, exposed to the morning sun; they must be planted about three inches deep, all the buds on that part which enters the ground being previously cut off, and watered, to help their taking root. The shoots should all be rubbed off from the plants as they come out, except those at the

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top, in order that there may be a regular stem. In the September following, they should be removed to a bed of fine light earth, and planted at two feet distance. They should remain here two years; and the cross branches at times be cut off, as well as the lower ones, so as to keep a clean stem about a foot above the ground. They may afterwards be planted where they are to remain; a light sandy loam is the best: and they should be kept from the shade of other trees. To have the fruit in the utmost perfection, they should be planted in an exposed place, in rows eight feet asunder, and every shrub six feet from one another in the rows. The best time for transplanting them is in October, after the leaves have fallen. They require pruning pretty freely, and after the manner of the currant.

Goosberries, when ripe, form an agreeable variety of summer fruit, if eaten in moderate quantity; but eaten unripe, and to excess, they are very injurious, producing flatulency and indigestion: we have observed the *ascarides* to be very common in children, after having eaten of this fruit. See WORMS.

A wine is made from goosberries as well as currants. See WINE.

Gorse. See FURZE.

Gosling. See GOOSE.

GOULARD, or Extract of lead, is a solution of lead in acetic acid or vinegar. See LEAD.

GOURD, or *Cucurbita*, in botany, a genus of plants consisting of seven species, natives of America, India, and the south of Europe, as follow:

The *Lagenaria*, or Bottle-gourd, with a woody fruit. An American plant.

The *Hispida*, a native of Japan.

The *Ovifera*, with ovate fruit, a native of Astracan.

The *Pept*, or Common Pompion, or pumpkin, a plant resembling the bottle-gourd, but considerably stronger, with thick trailing stalks. It is the most hardy of all the species. The fruit sometimes weighs fifty pounds, or upwards. The pulp is boiled, and eat-

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en mashed, like turnips; the seed contains a considerable quantity of oil.

The *Verrucosa*, or Warty gourd, is an American plant, having a fruit with a rind almost woody.

The *Melopepo*, or upright Squash, rising with an erect stalk, several feet high; fruit of a moderate size; depressed and knotty. A native of the East Indies.

The *Citrullus*, or Water melon, a native of the south of Europe; fruit about a foot and a half in diameter, esteemed for its coolness in hot climates, but insipid in our own.

Most of these species have several varieties, and the fruit frequently change their form. They are raised from seeds set annually in a moderate hot-bed, or heap of dry dung, in the month of April, or beginning of May.

Few of these, except the pumpkin, are considered of any importance in this country, but in hot climates, they contribute a considerable portion of the food of the common people.

GOURD, SOUR, MONKEY'S BREAD, or *Adansonia*, in botany, a genus consisting of one species, discovered by Adanson, on the banks of the Senegal: its fruit consists of a woody ten-celled capsule, having numerous seeds imbedded in a farinaceous pulp.

GOURD-TREE, CALABASH-TREE, or *Crescentia* a genus of trees, having two species as follow: The *Cajete* a native tree of Jamaica and the Leeward Islands, rising from twenty to thirty feet in height, and branching at the top into a large head. The fruit is large, with a thick skin, and woody shell, capable of containing, when emptied of its pulp, nearly three pints; the shells are sometimes so large as to hold two gallons of water: they are appropriated to various purposes. The *Cucurbitina* is the other species, a native also of the West Indies, but a more diminutive tree than the first. Both species may be easily propagated, but can only be reared in a hot-house.

Gourd-worm. See FLUKE.

GOURDINESS, among farriers, a

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swelling in a horse's legs, of a dropsical or œdematous nature. It often precedes the grease, and will produce it if not counteracted by evacuants adapted to the case.

GOUT, or **PODAGRA**, a disease which begins with an excruciating pain in some part of the body, most usually the toes or feet, which swells and inflames, accompanied with more or less fever, and mostly terminates by resolution, or the decomposition of a chalky matter. It is said to be hereditary; but we think this very questionable. That a predisposition to gout is found in many individuals we are well aware; but predisposition ought to be most carefully distinguished from the disease itself. See **PREDISPOSITION**. It has been divided into the regular, the atonic, the retrocedent, and the wandering gout.

The limits of our work prevent our treating these different varieties, even were we so disposed, in detail.

Perhaps there is no disease afflicting the human frame, which has given rise to so many different and opposite modes of treatment as the gout. Some persons contending that it is an inflammatory disease, requiring evacuants, and others that it is strictly a disease of debility, requiring stimulants for its cure. We cannot be expected to settle such a question, but we think that facts are in favour of the latter hypothesis.

What is called a *fit of the gout*, consists, principally, of an inflammatory affection of some of the joints. This sometimes comes on suddenly, without any warning, but is generally preceded by several symptoms such as the cessation of the sweating with which the feet had been commonly affected; an unusual coldness of the feet and legs; a frequent numbness, alternating with a sense of prickling, along the whole of the lower extremities; frequent cramps of the muscles of the legs; and an unusual turgescence of the veins. While these symptoms take place in the lower extremities, the body is affected with torpor and languor, and the functions of the stomach, in particular, are

more or less disturbed. The appetite is diminished, and flatulency or other symptoms of indigestion are felt. These symptoms take place for several days, sometimes for a week or two before the paroxysm comes on; and its immediate access is commonly preceded by a keener appetite than usual.

This complaint comes on most commonly in the spring; but it occurs at all times of the year; in persons in the country, we have observed it to come on soon after the festivities of Christmas.

The attack is sometimes felt first in the evening, but most commonly about two or three o'clock in the morning; one foot is generally affected, and most commonly the ball, or first joint of the great toe; but sometimes, other parts of the foot; with the pain there is, commonly, more or less of cold shivering, which, as the pain increases, gradually ceases, and is succeeded by a fever, which continues for the same time with the pain itself. From the first attack the pain continues to increase, with restlessness of the whole body, till next midnight, after which it gradually remits, and having continued about twenty-four hours from the time of the attack, ceases almost entirely, and with the coming on of a gentle sweat, allows the patient to fall asleep. The affected part is red and swelled, but after a few days' continuance, gradually abates. The disease, however, does not always go off by the first attack, but the patient has, for some days, every evening, a return. When the disease of the joint ceases entirely, it generally leaves the person in very perfect health, enjoying greater ease and alacrity in the functions of both body and mind, than he had for a long time experienced.

At the beginning of the disease, its returns are sometimes only once in three or four years, but as it advances the intervals become shorter; the attacks are annual; twice a year; or, at length, so often that the patient is not often free from it, except two or three months in the summer. Although at first only attacking one foot, it afterwards at-

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tacks either in succession or jointly, both feet, and also the joints of the upper extremities, &c. In many persons, after a frequent recurrence of the disease, concretions of a chalky nature, are found on the outside of the joints, and, for the most part, immediately under the skin. They contribute, with other circumstances, to destroy the motion of the joint.

In patients who have laboured under this disease for years, a nephritic affection often alternates with its paroxysms: both affections rarely occurring in the same patient at once. See GRAVEL.

This is the most common form of the disease; but it often assumes very different appearances; and is then called by different names, as mentioned above, but upon which we cannot enlarge.

The most common causes of the gout are, a *sedentary, indolent mode of life, a full diet of animal food, stimulating liquors, and wines*. Other causes have been mentioned; such as excessive venery, much application to study or business, night-watching, excessive evacuations; the cessation of usual labour: a sudden change from a full to a spare diet, the use of acids, and aced-scent food and drink; and cold applied to the lower extremities; the principal are doubtless the first: for we very rarely find the poor afflicted with this disease.

Exercise, and regular living, trenching on the abstemious, are, we have no doubt, the best preventives of the gout: but its perfect cure, when once the system has been attacked by it, is not so frequent as could be desired. What is said under ALIMENT, APPETITE, and DYSPEPSIA, should in this disease be particularly attended to. It is essential that the bowels should be kept regular, or somewhat lax, without much purging; and for this purpose, aloes or rhubarb are to be preferred. The compound colocynth pills, or the Scot's pills, are the best aloetics.

The vapour-bath has lately been recommended in this complaint, and we

think it is a remedy which, in many cases, promises well. But the roots of the meadow-saffron, have been used as a powerful remedy in paroxysms of the gout, and as it comes recommended by the high authority of Sir EVERARD HOME, and others, we offer it with confidence to our readers. A quack medicine has been for some time sold under the name of *Eau medicinale d'Husson*; this has been found to possess the same properties as a *wine of meadow saffron*, and is consequently supposed to be the same medicine. See MEADOW-SAFFRON. The *clear wine* is to be taken in doses of sixty drops, or minims; in some constitutions, a dose of 70 minims may be required. According to Sir E. Home, a dose of 60 drops of this wine has completely removed a violent attack of the gout in the left foot in 24 hours.

After the paroxysms have ceased, if swelling and stiffness remain in the joints, frictions with the flesh-brush, or flannel, are the best remedy.

When the gout attacks the more vital parts, such as the breast, stomach, &c., it is generally attended with vomiting, which should be encouraged by small doses of ipecacuanha, about half a grain every ten minutes; the part affected may also be rubbed externally with æther. When the stomach is composed, small doses of camphor, or æther, may be given internally. But perhaps better than these, are small but strong doses of BEEF-TEA. Mustard cataplasms may also be applied to the feet; and the lower extremities should be kept warm.

In severe attacks, however, of all the varieties of gout, the patient should consult a medical practitioner. But we think an attentive observer of his own constitution, and one who is not both a devotee and a dupe to his luxurious inclinations will, in general, be enabled, without medical assistance, to prevent the inroads of this troublesome visitant. BODILY LABOUR is, beyond question, the first and best of all preventives. Upon this and other exercise, and the

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regulation of the diet, more will depend than upon all the medicine in the world. See GRAVEL.

GOUTWEED, or *Egopodium*, a genus consisting of one species of plant, found wild in our own hedges and roadsides, with small white flowers, and leaves resembling angelica, and hence it has been sometimes called wild angelica. It has been supposed beneficial in gout; but this and numerous other plants which have obtained their common names from their supposed virtues, have not, upon rigid examination, often answered their nominal description.

GOVERNMENT, an orderly power constituted for the public good. The use and necessity of government is such, that there never was an age or country without some sort of civil authority. The origin of society is our wants; of government, our wickedness; the former promotes our happiness positively, by uniting our affections; the latter negatively, by restraining our vices. The one encourages intercourse, the other creates distinctions. Society in every state is a blessing, government in its best state, a necessary evil, in which men surrender certain liberties in order to retain the rest. Were man a perfect being, he would not need government. He, therefore, who expects a *perfect* government to be formed from imperfect materials, man, expects an absurdity. Individual security and happiness being the true end and design of government, whatever form insures it with the least expense, consistent also with the general security and happiness of all, is to be preferred. It is not in accordance with our work, to enter farther into the consideration of this important subject; these few but simple principles are, however, and always will be sufficient, while the nature of man remains the same, to guide every person endowed with common sense, in the choice of that government which is at all times, and upon all occasions, most desirable to be adopted.

GRACE, or **GRACEFULNESS**, an agreeable attribute, not easily defined,

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but it is unquestionably the noblest part of beauty. In manners, grace consists more in the mode of doing things, than in the things themselves. Graceful manners are a perpetual letter of recommendation. See **GOOD BREEDING**.

GRACE, DAYS OF, three days, immediately following the term of payment of a bill, within which the creditor must note and protest it, if payment is not obtained, in order to entitle him to recover against the drawer.

GRAFTING, in gardening, the insertion of a shoot or scion of one plant or tree, into the stock or stem of another, so that both may unite and become one tree. The use of grafting is to propagate any curious sort of fruit, so as to be certain of the kind, which cannot be done by any other method.

In the choice of grafts we should be careful that they are shoots of the former year, although older wood will sometimes succeed; that they are taken from healthy trees; and from the lateral or horizontal, and not from the perpendicular shoots. The grafts should be cut off before the buds begin to swell, which is generally three weeks or a month before the season for grafting; when cut off they should be laid in the ground, with the cut downwards, burying them half their length, and covering their tops with dry litter, to prevent their drying; if a small joint of the former year's wood be cut off, it will preserve it the better. If the grafts are to be sent to a considerable distance, their cut ends should be put into a lump of soft clay, and wrapped up in moss.

In grafting, all such trees as are of the same genus, will take upon each other; thus all nut-bearing trees may be safely grafted upon each other, so also may the palm-bearing trees, under which head may be reckoned not only the several sorts of *plum*, but also the almond, peach, nectarine, apricot, &c. The medlar being of the same genus as the white-thorn, may be, and almost always is, in this country, advantageously grafted upon it.

All such trees as bear cones will do well upon each other, although one may

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be evergreen, and the other deciduous ; such as the cedar of Libanus, and the larch ; these, however, succeed best if grafted by approach ; so also may the cherry on the laurel, or the laurel on the cherry, be grafted. All the mast-bearing trees will take upon each other ; and those having a tender soft wood will do well if grafted in the common way ; but those of a firmer texture, and slow growers, should be grafted by approach.

The implements necessary for grafting are, a small hand-saw, to cut off the heads of the stocks ; a good strong knife, with a thick back, to make clefts in the stocks, and to pare them ; a sharp pen-knife to cut the grafts ; a grafting chisel, and a small mallet ; bass strings, or woollen yarn, and a quantity of clay, which should be prepared a month before it is used, and in the following manner : Take strong fat loam and new horse-dung, about equal parts ; a little straw, or hay, cut very small ; and if there be a quantity of salt added it will prevent the clay from cracking in dry weather. This compost should be well mixed like mortar, by the addition of a sufficient quantity of water ; after which it should be moistened afresh, and stirred every other day. This is the most common composition for covering the stock after it is grafted ; but latterly a composition of common turpentine, bees-wax, and rosin melted together, and, being of a proper consistence, is put on the stock, round the graft, in the same manner as the clay is usually applied ; and although it be not more than a quarter of an inch thick, it resists the air, and is, in other respects, more effectual than clay. This mixture, however, should not be applied too hot, or the graft will be injured.

The principal modes of grafting are the following :

Grafting in the rind, called also crown-grafting, and shoulder-grafting, is only proper for large trees, where either the head or the large branches are cut off horizontally, and two or more scions are put in, according to the size of the branch or stem : in doing this,

the scions are cut flat on one side, with a shoulder to rest upon the crown of the stock ; the rind must then be raised up, to admit the scion to enter about two inches between the wood and the bark of the stock, so that the shoulder of the scion may meet, and closely unite with the crown of the stock. After a sufficient number of scions are inserted, the whole crown of the stock should be well clayed over, leaving two buds of the scions uncovered. The only inconvenience attending this mode of grafting is, that the grafts are liable to be blown out by the wind after they have made some progress in their growth. They should therefore be secured from such accident by proper support. The latter end of March, or beginning of April, is the best time for this process.

Cleft-Grafting, termed also stock or slit grafting, is practised upon stocks or trees of a smaller size, from an inch or two inches or more in diameter, and may be used with success where the rind of the stock is not too thick. The head of the stock must be cut off with a slope, and the slit made the contrary way, in the top of the slope, to receive the scion, which should be cut sloping, like a wedge, so as to fit the slit made in the stock, care being taken that the bark of the scion fits accurately to the bark of the stock. In small stocks, a ligature of brass is sometimes necessary, to prevent the slit from opening. The stock should be clayed over, the same as in rind-grafting. But, in truth, we do not approve of cleft-grafting, many other methods being superior, particularly a practice with small stocks, called *saddle-grafting*, which is similar to

Whip-grafting, called also tongue-grafting. This is very commonly practised, especially on small stocks, because the scions much sooner cover the stocks in this method, than in any other, and because also that obstruction to the growth of the stalk does not take place which occurs in cleft-grafting. Whip-grafting is performed by cutting off the head of the stocks sloping ; there must then be a notch made in the slope, towards the upper part, down-

wards, a little more than half an inch deep, to receive the scion, which must be cut with a slope upwards, and a part left in this slope like a tongue, which tongue must be inserted into the slit made in the slope of the stock, so as that the two rinds of both scion and stock may be equal, and join together exactly: there should be a ligature of brass to fasten the scion; and afterwards it should be clayed over, as in the former methods.

Root-grafting, consists in grafting a fine fruitful branch upon a root. To perform this, take a graft of the tree designed to be propagated, and a small piece of the root of another tree of the same kind, or very near it;—or pieces of roots cut from the tree transplanted, and whip-graft them, binding them well together. Such graft may be planted where it is to stand, for the piece of root will draw sap, and feed the graft as the stock does in the other methods.

Inarching, or grafting by approach, is a mode by which the different parts of trees, intended to be united, are bent down, and placed in contact, while the trees remain growing. It is most commonly practised on tender exotics, and some other plants, such as jessamines, myrtles, walnuts, oranges, &c., which do not succeed by ordinary methods. It is performed thus: A part of the stock, or branch, is slit off, about two inches in length, a smooth part of the stock being always chosen for the purpose; then a small notch is made in this slit of the stock, downwards, in the same manner as is used for whip-grafting; the branch of the tree designed to be inarched having a part slit off in the same manner as the stock, and a slit made upwards in it, so as to leave a tongue: which tongue should be inserted into the slit of the stock, joining their rinds equally, that they may unite well together; after which a ligature of brass should be made, so as to keep them exactly in their situation, and afterwards this part of the stock must be clayed over well, to keep out the air. The scion is not separated from the tree until it is firmly united with the

stock; nor is the head of the stock, or branch which is grafted, cut off till the same time, and only half the wood pared off, with a slope about three inches in length, and the same of the scion or graft.

Inarching is not performed so early in the season as other grafting, never being done till the month of April or May, when the sap is flowing, at which time the scion and stock will join much sooner than at any other time. The time, however, of grafting, generally, must vary with the season. Plums should be grafted three weeks or a month earlier than apples; these last may be generally grafted about the end of March, but sometimes, if the season be late, the middle of April will be soon enough. See BUDDING.

GRAIN, that fruit or seed which grows in a spike or ear; grain comprehends corn of every kind, such as *Wheat, Rye, Barley, Oats, &c.*

GRAIN also denotes the smallest weight used in England. One drachm of the apothecaries' weight contains sixty grains. See APOTHECARIES', AVOIR-DEPOISE, and TROY WEIGHT.

GRAINS, the refuse of malt which has been brewed or distilled. Pigs are often fed and fatted by the grains of the distilleries and brewhouses, but we cannot speak of such feeding with approbation. The pork is often very indifferent, and the fat soft and flabby. Cows are also, we are informed, fed with grain in the neighbourhood of the metropolis, not, we believe, with much advantage to their milk. Grains, however, given to hogs in moderate quantity, and with a mixture of other food, are a useful variety of diet for them; particularly young and growing ones.

GRAINS OF PARADISE, or GREATER CARDAMOMS, the seeds of the *Cardamomum majus*, or the *Amomum grani paradisi* of Linnaeus. They are angular, reddish brown seeds, smaller than pepper in appearance, and much resembling the lesser cardamoms, and are brought to this country chiefly from the coast of Africa, between the tropics, being distinguished in com-

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merce by the name of Guinea grains. Grains of paradise are rarely used medicinally, although they are certainly a useful stimulant. They are, however, often given as a warm cordial to horses and cattle. The dose may be, for these animals, from one to two ounces, or more.

Grains of paradise are employed by fraudulent brewers to give a pungent taste to weak and insipid beer.

Graining. See *CARP*.

GRAKLE, or *Gracula*, in zoology, a genus of birds, consisting of thirteen species, natives of India and South America; some of them of Europe. They have a thick, convex bill, compressed at the sides, with small nostrils, and sharp-hooked claws; the middle toe of the fore-feet connected at the base with the outer. The following are the chief:

The *Religiosa*, or Minor grakle, violet black, spot on the wings white; hind-head with a yellow, naked band. Another variety much larger. Inhabits Asia: the first is ten and a half inches long; feeds on cherries, grapes, and other fruits. When tamed, is exceedingly loquacious.

The *Barita*, or Boat-tailed grakle, is greyish; shoulders blue; quill-feathers outside, green. Inhabits America.

The *Christellata*, or Crested grakle, is black; first quill-feathers at the base, and tail-feathers at the tip, white; bill yellow—legs yellow. Inhabits China; eight and a half inches long, very loquacious, and makes a hissing noise.

The *Quiscalia*, or Purple grakle; violet black; tail rounded. Male thirteen and a half, female eleven and a half inches long; sings finely; lays five or six bluish eggs, with black striped spots; when domesticated, feeds on all kinds of grain: and though very destructive to plantations, clears them, in a considerable degree, from noxious insects, on which account, the breed has been of late years encouraged in the West Indies. It is a native of Mexico, the warm parts of America, and Jamaica.

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The *Sturvina*, is hoary; black on the crown and back; between the wings violet black; tail and wings with a shade of green. Female dirty ash, back brown; wings and tail deep black. In its eggs and nest resembles the thrush. Inhabits the ozier banks of Dauria.

GRAMMAR, the art or science of rightly expressing our thoughts by words.

A knowledge of grammar should be acquired by every rational being: for as language is the medium by which our thoughts are commonly expressed, and as a knowledge of grammar enables us to convey our thoughts most correctly to others, by means of language, it is surely of great importance that such means should be as clear and perspicuous as possible. Such clearness and perspicuity, a knowledge of grammar enables us to obtain. In the acquisition of this science, however, the mere pedant has always mistaken the way. Hence it is no uncommon thing to find, even in the present day, a person well versed in the learned languages, who knows comparatively little of the intimate structure of his mother tongue. Let, therefore, a knowledge of the structure of our own language, and of course its grammar, precede the study of any other; when this is acquired, if there be time and opportunity, the knowledge of other languages may be added with much ease and effect.

Grammar, like other sciences, is best acquired by definitions and classification, and although perhaps no terms which have been yet invented do, in every instance, convey that meaning which a philosophical investigation of language requires, yet till better are invented we must, to avoid confusion, content ourselves with those terms which are in common use.

Besides letters, which are, or ought to be, the signs of sounds, we have syllables and words, which are, for the most part, compound sounds. Words are divided by grammarians into the following kinds: *article*, *noun*, or *substantive*, *adjective*, *pronoun*, *verb*, *par-*

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inciple, adverb, preposition, conjunction, and interjection. The greatest difficulty to all learners of grammar is, the acquisition of that knowledge which enables them to distinguish these different parts of speech, and therefore care and assiduity ought to be employed to enable the learner so to do before he proceeds one step farther in this pleasant and agreeable study, which it may most assuredly be made with a very moderate share of attention and adroitness; and not, as it too generally is, a tedious and disgusting one. Having mastered this difficulty, we think few students will, in their after progress, find any difficulty whatever.

It is not consistent with our work to proceed further in the detail of this plan of studying grammar; but against the system of committing so much to memory, we most strongly protest: let the understanding be exercised more and the memory less, and sure we are, that whoever adopts our advice, will find his successful account in it.

We are sorry to observe that our modern writers on grammar have taken so little notice of the great work of Mr. HORNE TOOKE, entitled *ΕΠΙΣ ΠΡΑΓΜΑΤΑ*, or *DIVERSIONS OF PURLEY*; every person, however, who desires to become intimately acquainted with the origin and structure of the English language, ought to study well that work, and the principles of grammar which are therein so ably developed. See LANGUAGE.

GRANARY, a building to lay or store corn in, especially that designed to be kept for a considerable time.

Granaries are built of different materials: often of wood; sometimes of brick. Those granaries are esteemed the best, which are built of brick, with quarters of timber wrought in in the inside, to which the boards may be nailed with which the inside of the granary must be lined close to the bricks, that there may not be any room left for vermin to shelter themselves. There may be storied one above another, which should be near the one to the other: because the shallower the corn lies, the

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better it is, and more easily turned. There should be no cellar or any other damp place under a granary, nor should it ever be built over stables. Two great cautions to be observed in erecting granaries are, to make them sufficiently strong, and to expose them to the most drying winds; for this reason it is that they should always stand alone, and be elevated a few feet above the ground, so that the air can circulate under them.

In several countries of Europe, great labour and expense are bestowed in storing corn in times of scarcity. In some places deep pits are made in the solid rock, in others, caves are dug in the sides of hills, in which the grain is deposited. Large granaries have also been built of stone, so as to admit of a free ventilation, and a frequent stirring of the corn. But for any moderate period, one or two years, there is no mode so advantageous as the keeping of grain in the straw, in a large well-built stack, properly secured from vermin.

As the straw, however, becomes less valuable the longer it is kept; and as stacks are exposed to the risk of fire, the discovery of a cheap mode of constructing a granary has been long wished for. A gentleman in Wiltshire, has devised a plan which seems to have brought buildings for preserving grain to a state of perfection. In this plan there is an easy mode by which the whole body of the grain is stirred; and the air is conveyed and circulated through every part of it, whatever may be the thickness or depth at which it is laid; and only one floor is necessary, however high the building may be. An engraving and description of this granary will be found in SINCLAIR'S *Code of Agriculture*. See FLOUR and CORN.

GRANITE, a stone, or primitive rock; one of the most abundant in nature, and the most useful in its application: it is so called, from its appearing to be made up of a number of distinct particles or grains. Its essential component parts are *quartz, felspar, and mica*. Its colour is commonly grey, or reddish. Granite is found in various parts of the world. In Eng-

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land, Scotland, and Ireland; the Alps, the Pyrenees, the Hartz, and the Tyrol. In Africa and Asia, granite constitutes the Uralian, Altaian, and Himalayan chains; and the Atlas mountains; and in South America, the lofty ranges of the Cordilleras are of a similar description. Some kinds of granite are prone to decomposition; but, in general, granite is the most durable of nature's productions, and long resists the destroying hand of time; as a building material, it is unrivalled.

GRANULATION, in chemistry, the process by which a metal is reduced into grains, which is effected by melting the metal, and then pouring it in a very slender stream into cold water. As soon as the metal comes in contact with the water, it divides into drops, which assume a spherical shape, more or less perfect, according to the thinness of the stream, the temperature of the metal, and the height from which it falls. Some of the more friable metals may be reduced to much finer grains by pouring it, in its melted state, into a wooden box, rubbed over with chalk, and shaking it violently before it has time to become solid.

GRANULATION, in surgery, incarnation, the production of new granules of flesh in a wound.

Grape. See **VINE**.

GRASS, a well-known vegetable food for all sorts of cattle. The grasses are a very numerous family, though all are not equally beneficial in their culture, some animals preferring one sort and some another.

The principal cultivated grasses are red, white, and yellow clover, sainfoin, lucerne, and rye-grass.

The *natural grasses*, properly so called, consist of 215 kinds, which are capable of being cultivated in the climate of Great Britain. Of these, only two have been employed to any extent in making artificial meadows—rye-grass, and cock's-foot grass. The Duke of Bedford was thence induced to try the comparative merits and value of a number of other grasses, to the amount of 97, the result of which is annexed to

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Sir H. DAVY's *Lectures*, and has since been published with more full details.

According to these experiments, tall fescue grass, *festuca cation*, stands highest, as to the quantity of nutritive matter afforded by the whole crop, when cut at the time of flowering; and meadow cat's-tail grass, *phleum pratense*, affords most food when cut at the time the seed is ripe. Sea meadow-grass produces the greatest quantity of aftermath.

See the various grasses in the order of the alphabet: see also **CLOVER**, and **HUSBANDRY**.

GRASS-HOPPER, or *Cicada*, a genus of insects consisting of two hundred and eighty-seven species, scattered over the globe. The following are the most remarkable: the *plebeja*, a native of Africa; the *orni*, inhabiting southern Europe; these two species form the cicadas of the Roman and Grecian poets. During the hottest part of the day in summer, the males, sitting among the leaves of trees, make a shrill and continual chirping. The *Spumaria*, also inhabits Europe. The larva and pupa of this and some other species of the genus, discharge a frothy matter from numerous pores about the tail, in which they soon become completely enveloped. This matter is frequently found in summer, upon various plants, and is commonly known by the name of cuckoo spittle. The perfect insect, when attempted to be caught, will sometimes spring to the distance of two or three yards. See **CRICKET**.

Grate. See **FIRE-PLACE**.

GRAUWACKE, a kind of slaty stone, abounding in various parts of England.

GRAVEL, in agriculture, and gardening, a congeries of pebbles of various sizes, mixed with a greater or larger portion of small particles, usually denominated sand. Gravel is an excellent material for walks in gardens, and other footways, but a very bad one for public roads and carriage ways, hence the heavy and loose nature of the roads in the neighbourhood of London. See **HUSBANDRY** and **SOIL**.

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GRAVEL, in medicine, a disease affecting the kidneys, ureters, and bladder; it is occasioned by a sandy or gritty substance, which collects in those parts, producing considerable pain, sometimes inflammation, and also often obstructs the proper secretion, and discharge of the urine.

The symptoms of gravel are very various: the chief, of course, is a discharge of sandy, or gravelly matter with the urine, attended with more or less inconvenience in making water; pain in the region of the kidneys; sickness; want of appetite, and other dyspeptic symptoms.

Of the numerous substances contained in the human urine, rarely more than three make their appearance in the form of deposit, or gravel: these are phosphate of lime, phosphate of ammonia and magnesia, and uric acid. The two former substances constitute a *white* sediment, the latter a *red* deposit. It is above all things necessary, clearly to distinguish between the two, and not to confound them, as many practitioners are apt to do.

The urine, in its healthy state, is an acid secretion. The acids naturally in excess in healthy urine are, the phosphoric, the uric, and the carbonic: this excess of acid retains the earthy salts above mentioned, in a state of solution; but whenever this inherent, or natural acidity of the urine is diminished, whether by digestion, irregular secretion, particular kinds of food, or improper medicines, a tendency to form the white deposit immediately ensues. When, therefore, from any cause, this white sand is observed, the internal use of acids will, in most cases, diminish or remove it.

It must not be forgotten, however, that a discharge of white sand is frequently symptomatic of disordered digestion, and is apt to appear in any case where excess in eating or drinking has been committed. It appears to be produced by the free use of amylaceous or farinaceous diet; and it may be always abundantly formed by alkaline medicines: persons who habitually drink

soda-water, are frequently voiding it. Its appearance in the latter cases, has often led to serious errors. Soda-water given for stone in the bladder, has *produced* abundance of white sand, which has been ignorantly supposed to be caused by the solvent power of the medicine upon the stone, whereas great mischief has been done, by imparting to the urine, more than its usual tendency to deposit the phosphates, and consequently to increase the size of the stone: for the urine has a natural tendency to deposit the above-mentioned phosphates upon any extraneous body in the urinary passages, and often upon the inner coat of the bladder, if it be at all diseased. The use of magnesia will also occasion the deposit of the phosphates by the urine. The tendency of the urine to deposit white sand, whenever its natural acidity is diminished, is shewn by the addition of a little alkali to recently voided urine, which immediately throws down a white powder.

The appearance of white sand does not seem deserving much attention where it is merely occasional, and where it follows indigestion brought on by accidental excess. If, however, it invariably follows such, and if it be observed in the urine, not as a mere deposit upon cooling, but at the time the last drops are voided, it becomes a more serious disorder; sometimes it precedes other forms of this complaint, and creates much irritation; and sometimes it may collect and concrete into a calculus, more especially if the complete evacuation of the contents of the bladder does not take place.

Having said that acids are the remedies for this species of the complaint, namely white sand, or gravel, the kind of acids is next to be considered.

The *nitric acid* may be given in doses of from five to twenty drops, night and morning, or thrice a day. It may be taken in plain or barley water. From ten to thirty drops of the dilute *sulphuric acid*, and from five to twenty of the *muriatic acid*, may be taken in the same way: that is, diluted till they become palatably acid.

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Of these acids the nitric is most apt to disagree with the stomach, and to occasion flatulency and eructations; it has sometimes, however, had an opposite effect. The sulphuric acid may most properly be termed tonic; it generally admits of being longer persevered in than either of the others, and almost always promotes the functions of the stomach where they are sluggish and irregular. The muriatic acid agrees, in most cases, with the stomach, but not so with the bowels, which always become more relaxed during its use; this circumstance, however, often recommends it; for constipation very frequently attends the state of body which favours the formation of white sand; and hence aperient medicines are, alone, adequate in some cases to suspend or prevent the disorder.

When these acids agree, they are usually very effective, and in a few days they diminish or entirely prevent the formation of the sabulous deposit; but when they disagree they rather increase its quantity, or tend to the production of a mucous secretion, which, in some cases, increases the risk of its agglutination, and of the formation of a concretion in the bladder. These acids almost always disagree with children, who are equally liable with adults to an increased secretion of those sandy phosphates, and in whom prompt and effectual treatment is equally requisite to prevent the formation of stone in the bladder.

In such cases recourse must be had to the *vegetable acids*.

The *Tartaric acid*, either pure or as *Cream of tartar*, may be given in pretty liberal doses: of the former from five to twenty grains, and of the latter from twenty to forty or sixty grains may be taken, either dissolved in barley-water, or administered in any other convenient vehicle; the cream of tartar, from its laxative properties, may be often the best.

The *Citric acid*, however, seems, on the whole, to be preferable to the tartaric; it may be given in the same way, in doses of from five grains to half

a drachm. It rarely proves inconveniently purgative, and is very effectual in modifying the secretion of urine.

Cases are by no means uncommon in which a white sabulous deposit in the urine, and often of an alarming extent, are symptomatic of, or in some way connected with irregularity of the biliary secretion; pain in the region of the liver, sallow complexion, whitish brown and dry tongue, are its usual concomitants in these cases; and there is also a very troublesome irregularity of the bowels. Many persons returning from warm climates suffer under this complaint; such often have recourse to strong alkaline solutions, or take soda water, solutions of potash, magnesia, and the like. This treatment, however, invariably does harm, and increases both the dyspepsia and the deposition of sabulous matter. Nor will the mineral acids be often proper, but the vegetable acids will be always greatly beneficial.

The best and simplest plan in such cases is not to employ medicine so much as diet; to adopt a general acid system; to abstain from soda water, and all alkalis; to refrain from malt liquor; to take weak lemonade, and an occasional glass of cider as ordinary drink at meals; if the patient be accustomed to wine, to prefer champagne and claret to Madeira or port, but to take little of either; if the bowels be constipated to take a drachm or two of Epsom salt in half a pint of luke-warm water, in the morning, fasting; or, what is more pleasant, to stir a tea-spoonful of magnesia into an occasional glass of sour lemonade; to eat salads and acid fruits, and more especially oranges, which, in this state of things, are an heroic remedy.

In some cases all the above-mentioned acids will be useless, or may even produce an aggravation of the disorder. In this case the carbonic acid will be found eminently useful. It may be taken either simply, dissolved in water, in which case it may easily be prepared by the patient in a *Nooth's apparatus*, or procured from the dealers in artifi-

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cial mineral waters ; or it may be given by dissolving thirty grains of carbonate of potash, and twenty grains of citric acid in separate tea-cups of water, mixing the solutions in a large tumbler, and drinking the whole during the effervescence. This dose may be repeated two or three times a day, or oftener if expedient.

The febrile affections of children are frequently attended by an apparently alarming deposit of white sand in the urine ; a dose of calomel will often carry off both the fever and the sand.

Having considered the nature of the white sand, and the mode of treatment to be adopted in regard to it, we shall now advert to the composition of the red sand, or gravel. Here, as in the former case, distinction must be made between those cases in which the sand is actually *roided*, and in which it is deposited, after some hours, by the urine, which at first was clear. The appearance of the red sand in the former case is an alarming indication of a tendency to form calculi ; in the latter it is often a temporary symptom of dyspepsia ; but yet, if it frequently occurs, means should be strenuously adopted for its prevention.

The red sand consists of uric acid, more or less pure ; and experience has sufficiently shown the efficacy of the alkalis and alkaline carbonates in preventing the increased secretion of this acid.

Soda is, by common consent, to be preferred to potash ; and although it is most effectual in its pure form, it is most prudent to use it in its highly carbonated state, as it is sold under the name of *soda water* : for it may be longer persevered in, and is less apt to injure the digestive organs in that state than in any other. It should be observed, however, that much of what is sold under the name of soda water, contains scarcely any soda, but is merely water impregnated with fixed air ; and further, that it is very apt to be contaminated by copper, zinc, or lead, arising from the vessels in which the condensation is carried on. These contaminations are very easily discovered by proper tests.

Soda water should be kept in the shops single, double, and treble ; the first should contain one, the second two, and the third three drachms of the crystallized subcarbonate of soda to the pint ; and from one to three half pints of either, may be taken daily, as it proves agreeable or efficacious. A portion of the alkali, in the strongest, may be conveniently neutralized by adding a table-spoonful of lemon juice to each half pint, which renders it more palatable.

Although soda-water is, in some cases, very effectual, in others it is less so than a similar solution of *potash*.

Ammonia, and *sub-carbonate of Ammonia*, are also of considerable use in many cases of red gravel ; and may be resorted to with advantage where symptoms of indigestion are brought on by the other alkalis ; they are more especially of use in that form of red gravel connected with gout ; and which, in gouty patients, often alternates with fits of the disease ; the joints and the kidneys being affected by turns.

Magnesia may be also taken with advantage, as a preventive of red gravel particularly where potash and soda have been so long employed as to disagree with the stomach.

The *Caustic alkalis* are best taken in any mucilaginous vegetable infusion ; barley-water, or gruel ; their nauseous flavour is much covered by liquorice. From five to sixty drops of *solution of potass*, of the London Pharmacopœia, has been called a dose ; from ten to twenty drops may be considered an average dose, taken night and morning, or thrice a day, in a glass of barley-water. A drachm of the *carbonate of potash*, or of the *carbonate of soda*, may be dissolved in two ounces of water, sweetened with honey, and taken during the effervescence, occasioned by the addition of half an ounce of lemon juice, twice or three times a day. From half a drachm to two drachms of the *solution of ammonia*, of the pharmacopœia, may be taken, in a sufficient quantity of water ; but the *sub-carbonate* is as effectual ; it may be given in pills thus : Take of sub-carbonate of

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ammonia twenty grains; of extract of chamomile flowers one drachm, with which form twenty-four pills; two or three of which may be taken for a dose twice or thrice a day. *Magnesia* may be either the calcined or sub-carbonate; the latter is generally preferable, except when the stomach is distended with wind, when the calcined should be chosen. The dose is, of the calcined, from ten to thirty grains; and of the sub-carbonate, or common *magnesia*, from twenty to forty or fifty grains. As *magnesia* sometimes collects and clogs the bowels, their state should be attended to during its use, and any accumulation which may have taken place, should be occasionally moved off by mild aperients, or by the occasional use of acids, when they are admissible. *Magnesia* may also be dissolved in excess of carbonic acid, and administered in the form of *magnesia-water*, which is an excellent substitute for soda-water.

In the treatment of this disease the first object should be to ascertain the nature of the matter voided; the next to select the most appropriate acid or alkali; and, in either case, to watch carefully over their effects, since the acids, after having removed the abundant phosphates, will sometimes induce the excess of uric acid; and nothing is more common than the appearance of white sand during the use of alkaline medicines.

Sometimes the sabulous deposit consists of a mixture of the red and white deposits; and the sediment of urine in inflammatory disorders, is said to be usually of this kind; it is very frequent in the urine of those who habitually indulge in excess of wine, and not uncommon in jaundice, and other affections of the liver. Nitric acid has been found efficacious in such compound symptoms. But it cannot be too often repeated, that in all cases of urinary sand and gravel, it is necessary to pay particular attention to the general state of the patient's health, and along with the medicines that a tonic and invigorating plan, in respect to the stomach, should be pursued.

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The best diet, however, for those who suffer from excess of acid, and who form red gravel, will be found, in many cases, a vegetable one; at the same time it must be remembered, that if dyspepsia arise from the want of the usual animal diet, mischief may be the result, and a return to animal diet must be made.

The above article is chiefly the substance of a valuable paper of Mr. BRANDE'S, in the twelfth number of the *Journal of Science, and the Arts*, to which too much publicity cannot be given. See GOUR and STONE.

GRAVELLING, in farriery, a bruise in the foot, from gravel being lodged between the shoe and sole. To cure this the shoe must be taken off, and the horn covering the bruised part pared away carefully, so that when the shoe is put on again the tender part may not receive any pressure. The same object may often be accomplished by merely hollowing the shoe. Should matter form, the horn must be pared away so as to give it free vent, after which the part should be dressed with blue vitrol, or green basilicon. If the bruised part is very tender and inflamed, a poultice must be applied.

Grave. See BURIAL, BURYING-GROUND, and EMBALMING.

GRAVITY, in natural philosophy, the tendency or inclination of bodies towards the centre.

Gravity, specific. See SPECIFIC GRAVITY.

Grayling. See SALMON.

GREASE, an inflammation and swelling of the horse's heels, sometimes extending upwards even to the knee or hock joint. The disease most commonly attacks the hind legs, but the fore-legs are liable to it. On examining the part it will be found very hot and tender, the animal appears to suffer considerable pain, and when first moved catches up the affected leg, if the hind-leg, as if he were cramped. A discharge of stinking matter from the heel soon follows.

Grease is brought on by sudden changes from a cold to a hot tempera-

ture: such as removing horses from grass into hot stables; or from hastily substituting a generous for an impoverishing diet. Horses which have been exposed to cold water, or snow for some time, and afterwards brought into a hot stable, and permitted to stand upon warm straw, dung, &c., will be soonest affected with the disease. In fact, the grease in the horse appears very similar to chilblains in the human subject, and is produced by similar causes, viz. exposure to heat when the limbs are unusually cold.

In this complaint bleeding, purging, and rowelling have been very generally recommended, but they are by no means always attended with success: and indeed we are disposed to consider bleeding as decidedly injurious. If, however, a horse when attacked with grease, be in good condition, and particularly if the pain and inflammation be considerable, bleeding will be proper; and, after cleansing the parts affected, a large saturnine poultice should be applied. If the horse be costive, a purging ball should be given.

The following lotion has effected a cure after emollient fomentations had been tried in vain: Take of corrosive sublimate two drachms; of muriatic acid four drachms; of water one pint. Mix them.

We think, however, that the green basilicon, the tar ointment with calomel, in the proportion of one drachm of the latter to an ounce of the former, or the yellow basilicon and red precipitate, mentioned under the article **BASILICON**, are much more efficacious applications.

The strictest attention to diet, regimen, and cleanliness must be observed during the whole treatment of grease, and gentle exercise must be persisted in. The horse should not be tied up in the stall, but stand loose while in the stable, or be turned out in some dry paddock, when the weather is favourable. The best means of preventing grease is to give the horse regular exercise, to dress him well, and especially to keep his legs and heels dry

and clean, and to avoid the extremes of heat and cold.

A horse affected with the grease should not come in contact with other horses.

Grease. See **FAT**.

Grebe. See **DIVER**.

GREEN, one of the primary colours exhibited by the refraction of the rays of light. See **COLOUR**.

For *Green* in Colour-making and Dyeing, see those articles.

Green-Finch. See **GROSBEAK**.

GREEN-HOUSE, or **CONSERVATORY**, a house in a garden, contrived for sheltering and preserving the most tender and curious exotic plants, which, in our climate, will not bear to be exposed to the open air during the winter season.

The length of green-houses must, of course, be proportioned to the number of the plants which they are to contain; but their depth should be never greater than their height in the clear. The windows in front, should extend from about one foot and a half above the pavement, to within the same distance of the ceiling. In a small green-house, the sashes should not be less than four or five feet broad; and in a large one, they should not exceed seven and a half; the shutters of which, ought to fall back close to the piers on the inside, that when open, they may not prevent the rays of light from reaching the plants. The piers between these windows, which support the building, should be as narrow as possible, and should be sloped off backwards, by which means the rays of the sun will be least obstructed. Over the green-house may be rooms for drying and preserving seeds, roots, &c. and behind it a house for tools, and other purposes.

The floor of the green-house which should be either of marble, stone, or tiles, should be raised at least two feet above the surface of the exterior ground upon which the house is built; or if it were raised on low brick-arches, they will most effectually prevent the damp. Under the floor, about three feet from the front, a flue should be made, about

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ten inches in width, and two feet deep, extending the whole length of the house, which may be returned along the back part, and the smoke be carried up by proper funnels adjoining the tool-house. The fire-place may be contrived at one end of the house; and the door at which the fuel is introduced, and also the ash-grate, should be in the tool-house. Where the fuel being likewise laid, the whole will be out of sight. Fires must, however, be very sparingly used: nor will one winter in three, require them to be lighted; indeed, no fire should be used at all, but when the frost cannot well be kept out any other way. Nor in the coldest weather should the green-house be shut up close for a long time together, as it frequently happens that, even in continued frosts, there is often sun-shine for an hour or two, in the middle of the day, which will be of great service to the plants, when permitted to enjoy it through the glasses; but when it is cloudy, the shutters should be closed again. The inside of the houses should be either white-washed, or painted white, as this colour reflects the greatest number of the rays of light.

In arranging the plants, care should be taken not to place them too close to each other; nor should euphorbiums, sedums, torch-thistles, and other tender esculents, be placed among oranges, myrtles, or other evergreens. To avoid this inconvenience two wings may be added to the main green-house. These wings may have sloping glasses at the tops, which should be made to take off and on at pleasure. It is scarcely necessary to add, that the main green-house should have a southern aspect, and that the plants requiring an eastern or a western sun, &c., will do best in places in the wings, to which, of course, flues, as in the main green-house, should be adapted.

Green-shank. See CURLEW.

Green sickness. See CHLOROSIS.

GREY, a colour, consisting of white with a mixture of black. See DYE-ING.

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Greyhound. See DOG.

GRIEF, an agonizing and painful affection of the mind, arising most commonly from domestic calamity; particularly from the loss of friends or relatives; or from the pain of body or mind, experienced by those whom we love and esteem. For that sudden grief which arises from the unexpected loss of friends, and other crises in human affairs, there appears to be no certain remedy but time. When, however, grief is indulged in, and the depressing train of feelings which accompanies it is fostered and encouraged, means should be taken, in the gentlest and kindest manner, to direct the mind to objects of a different nature, and such as are calculated to introduce a totally dissimilar train of ideas. Amongst these, cheerful company, and a *change of place*, is often of great importance. If the health has become affected, stimulating cordials, animal food, and even medicine, must be had recourse to. See AFFLICTION, and ANXIETY.

GRINDING, in cutlery, an operation by which edge-tools are sharpened. As commonly practised, such grinding is attended with great inconvenience, both from heat and friction. When edge-tools are ground upon a dry stone, the heat produced during this process is such, that the steel very soon becomes ignited, and hard tools are very frequently softened and spoiled, for want of care during the grinding. To remedy this inconvenience, the grinding-stone is commonly made to revolve in a trough of water; but, even by this, all the inconvenience is not obviated.

Grind-stone. See SAND-STONE.

GRIPES, or COLIC, a very common disease in horses, and is produced by various causes, such as drinking freely of cold water when they are heated by exercise; eating greedily of food that is difficult of digestion, such as new hay, or oats; eating too much green food, when unaccustomed to it; an accumulation of hard dung in the bowels; and, sometimes, this complaint comes on without any apparent cause. Horses

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which scour or purge readily, even by moderate work, are very liable to this disease.

When a horse is first attacked, the pain is not considerable, but he is uneasy and restless, sometimes pawing his litter and looking round to his flank; as the pain increases he lies down, groans, suddenly rises again; then lies down and rolls upon his back. If proper remedies are not given, he sometimes continues in this state for several hours, the pain becomes more violent; and, if not relieved, inflammation, mortification, and death ensue.

On the first attack, the pulse is seldom altered, and the disease may often be easily cured by common domestic remedies, such as gin and peppermint-water, or warm beer and ginger; at others it is of a more serious nature, and requires the most prompt and efficacious treatment. One of the best remedies which we know, is half a pint of Daffy's Elixir. Or, a pint of castor-oil, one drachm of oil of peppermint, and four ounces of water may be mixed together, with the yolks of two eggs, and given for one dose.

If the horse scoured previously to the attack, the following may speedily relieve him: Take of tincture of opium six drachms, or even an ounce; sweet spirit of nitre two ounces; gruel, or warm water, one pint. This drench may be washed down with a hornful of warm water, and let the animal be led about for a short time.

But if the horse has not been observed to dung for some time previously to the attack, or if the dung be hard, or in small knobs, and of a slimy appearance, clysters and opening medicines will be necessary. See **CLYSTER**. The following *opening drink* will generally give relief: Take of Barbadoes aloes powdered, three drachms; of Castile soap half an ounce; of oil of peppermint one drachm; of water six ounces. Mix the soap gradually with part of the water and the oil of peppermint: then mix with it the powdered aloes and the rest of the water; add to this one pint of castor-oil or sweet-oil, and six drachms

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of tincture of opium, for one dose. The opening clyster may be repeated if the pain does not abate. The horse's belly should be well wiped; or, if the pain be violent, it may be well rubbed with some stimulating liniment, or embrocation: such as mustard mixed with water, and a little solution of ammoniac.

Post and coach-horses are liable to a very dangerous colic, by being driven off at a quick rate when the stomach is full of food. In such case the horse should be immediately taken out, and rest till the food is digested: brandy, rum, or gin, diluted with warm water; or warm beer, with a large dose of ginger or pepper should be given.

There is another kind of colic, in which the gut breaks through the mesentery, and becomes strangulated; it always proves fatal.

It is of the utmost importance to distinguish flatulent colic, or gripes, from inflammation of the bowels; and it should be recollected that if not seasonably attended to, it often terminates in inflammation. See **BOWELS OF THE HORSE, inflammation of.**

Gristle. See **CARTILAGE**.

GROMWELL, or *Lithospermum*, a genus of plants comprehending sixteen species, scattered over the globe; of which three are common to the dry woods, corn-fields, and mountains of our own country. The chief is the *officinale*, having lanceolate leaves and smooth seeds. The seeds were formerly used as an expeller of stone in the bladder; they are sometimes still employed in emulsions, for obviating strangury.

GROSBEAK, or *Loxia*, a genus of birds, comprehending a hundred and one species, of which five are British. This tribe has the bill strong, thick, convex, rounded at the base, and the lower mandible bent in at the edge; nostrils small, round at the base of the bill: tongue truncate. Both mandibles are moveable. The following are some of the chief:

The *Curvirostra*, or Crossbill, is the most remarkable of the tribe. Both mandibles of the bill are hooked, and

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turned different ways, so that they do not meet at the point. It is an incessant visitor of the British islands ; but inhabits permanently and generally Germany, Switzerland, the Alps and Pyrenees ; but they are often migratory in other countries. They live upon the seeds of apples, the pine, &c. Their plumage often varies. The male from deep red to orange and yellow ; the female from green to different shades of the same colour. They build on high trees ; eggs whitish, with red spots.

The *Pyrrhula*, or Bulfinch. See **BULFINCH**.

The *Coccothraustes*, or Hawfinch, is of a chestnut ash-colour ; wings with a white line. Inhabits Europe, rarely England. Six and three quarters inches long ; builds on trees ; eggs blueish-green, spotted with brown.

The *Cardinalis*, or Cardinal grosbeak, is crested, red ; inhabits North America, nearly eight inches long ; sings very finely in spring and summer ; feeds on grain and Indian corn, which it hoards up.

The *Chloris*, or Green-finch, is yellowish-green ; inhabits England, and Europe generally, and Kamschatka ; builds in hedges ; easily tamed ; eggs five or six, with blood-coloured spots.

The *Sulphurata*, or Brimstone grosbeak, is olive-brown ; throat and belly pale yellow. Inhabits in flocks the Cape of Good Hope ; five and three quarters inches long ; builds a pendulous nest, with a long neck beneath, in trees and shrubs.

The *Philippina*, or Philippine grosbeak, is brown, beneath, yellowish-white ; crown and breast pale yellow. Another variety with tail and quill-feathers greenish-brown edged with yellow. The female reddish below. The first inhabits the Philippine isles ; the second Abyssinia ; five and a half inches long ; constructs a curious nest with the long fibres of plants, or dried grass, and suspends it by a cord nearly half an ell long, from the end of a slender branch of some tree, that it may be inaccessible to snakes, and other hostile animals ; the interior consists of three

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divisions ; the first is occupied by the male ; the second by the female, the third by the young ; in the first apartment, where the male keeps watch while the female is hatching, a little tough clay is placed on one side, and on the top of this a glow-worm, which affords its inhabitants light in the night-time.

The nest of the second variety is spiral, with an opening on one side, which is always turned from the rainy quarter.

The *Abyssinica*, or Abyssinian grosbeak, is yellowish ; the crown, temples, throat, and breast, black ; inhabits Abyssinia ; size of the haw-finch ; nest pyramidal, pendant, with an opening on one side, and divided in the middle by a partition.

The *Pensilis*, or Pensile grosbeak, is green ; head and throat yellow ; belly grey ; size of a house-sparrow ; inhabits Madagascar ; nest pensile, shaped like a bag, with an opening beneath, on one side of which is the true nest ; does not choose a new situation every year ; but fastens a new nest to the end of the last, often having a chain of five nests in succession ; builds in large societies ; brings three at each hatching.

The *Socia*, or Sociable grosbeak, is rufous, brown, beneath yellowish ; inhabits the Cape of Good Hope ; five and a half inches long ; lives together in vast tribes, from eight hundred to a thousand, at times, under one common roof, containing their several nests, which are built on a large species of the mimosa.

GROSS, in commerce, twelve dozen.

GROUND-IVY, or *Glecoma*, in botany, a genus consisting of one species only, the *hederaceu*, a well known native of the hedges of our own country ; but, although formerly in the *matéria medica*, is now considered of no importance whatever. It is eaten by sheep, but by no other cattle.

Ground-pine. See **GERMANDER**.

GROUNDLING, or *Cobitis taenia*, one of the six species of the genus of fishes termed **COBITIS**, or *Locke*. They are as follow : The *Anableps*, inhabiting the shores of Surinam :—the *Barbata*, or Bearded Locke, inhabiting the

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fresh waters of Europe and Asia ; from three to four inches long ; body varied with white, ash-colour, and blackish ; flesh exquisite :—the *Fossilis*, inhabiting boggy places, and streams of Europe ; about twelve inches long ; flesh good :—the *Heteroclitia*, or Mud-fish, inhabits Carolina ; about a palm long. —The *Japonica*, inhabits Japan ; five inches long.—The *Tœnia*, or groundling, the first-mentioned species, inhabits Europe, has a forked spine under each eye ; keeps under stones in small brooks ; when handled makes a hissing noise ; five inches long.

GROUNDSEL, **RAGWORT**, or *Senecio*, a genus of plants, comprehending one hundred and twenty species, scattered, for the most part, over the warmer climates of the globe ; the greater number belonging to the Cape ; eight common to the wastes, woods, or marshes of our own country. The following are the chief :

The *Vulgaris*, or Common Groundsel, is a well-known annual plant, common to our own country, of no importance whatever, except that the flowers and seeds are eaten or nibbled at by goldfinches.

The *Hieracifolius*, or Hieracium-leaved groundsel.

The *Pseudo-China*, or Chinese groundsel.

The *Hastatus*, or Spleen-wort-leaved groundsel.

The *Elegans*, Elegant groundsel, or Purple jacobæa.

The second is a native of North America ; the third of the East Indies ; the other two of the Cape. The purple jacobæa is an annual, with herbaceous branching stalks, nearly three feet high ; the flowers are in bunches, large, the ray a beautiful purple, the disk yellow. They open in June or July, and are renewed by a fresh succession, till destroyed by frost.

GROUSE, or **RED** and **BLACK** game, consist of several species of birds, of the genus **TETRAO**. See **PARTRIDGE**.

GROVE, in ornamental gardening, a number of trees growing wild, or

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purposely planted, beneath which is a walk or walks, and sometimes occasional seats.

Groves are not only a great ornament to gardens, but also the greatest relief against violent heats of the sun. Too many of the groves planted in this country, as well as in other parts of Europe, are in straight lines ; but these are by no means so grand or so beautiful as those which have been made in natural woods, where the trees have grown at irregular distances, and are left so far asunder as to permit the grass to grow under them. In planting groves, therefore, the trees should be disposed irregularly ; and in laying out an ornamental garden, when full-grown trees are found on the spot, they should, if possible, remain inviolate ; nothing but their being too near to the house, their obstructing a prospect, or occasioning damp, ought to tempt us to remove them. When groves are properly laid out, with dry winding walks through them, and with sweet-smelling shrubs and flowers, planted irregularly on their sides, they have a charming effect, and are of real utility. Such delightful spots imagination may easily conceive, where

* Around us every breeze

Fans the cool fragrance from the waving trees ;
Where, mid the shades, the birds' melodious song

In echoing strains is gently borne along ;
Where odorous flowers appear of various hue,
And morning roses shed their crystal dew ;
Where bubbling fountains burst the rocks beneath,

Whilst plaintive love entwines his myrtle wreath.

GRUB, the name of worms produced from the eggs of beetles, which are at length transformed into winged insects of the same species as their parents. See **COCK CHAFER**.

Grub also implies, in a more general sense, any small worm which eats holes in a variety of bodies.

Grubber. See **SCARIFIER**.

Guaiaicum, the tree. See **LIGNUM VITÆ**.

Guaiaicum, the gum. See **LIGNUM VITÆ**.

GUARDIAN, one appointed by the wisdom and policy of the law, to take care of a person and his affairs, who, by reason of his want of understanding, or imbecility, is incapable of acting for his own interest.

There are several kinds of guardians, as, guardian by nature, such is the father and mother; the father, by the common law, has the right of guardianship of the body of his son and heir until he attains the age of twenty-one years. The other principal guardians are those by statute, or testamentary guardians: and guardians by appointment of the Lord Chancellor, who is himself universal guardian of all infants, idiots, and lunatics, who cannot take care of themselves. At the present time, the court of chancery is the only proper court which has jurisdiction in appointing guardians, when not otherwise legally appointed; and in removing them, and preventing them and others from abusing the persons or estates of all those who are incapable of taking care of themselves.

Gudgeon. See **CARP**.

GUDGEON, in mechanics, a pivot on which something turns. See **FRICTIO**.

GUELDER-ROSE, or *Viburnum*, a genus of plants comprising twenty-three species, chiefly natives of the East and West Indies; a few of Europe; two common to our own woods. The following are cultivated:

The *Lantana*, Wayfaring-tree, or Mealy guelder-rose; shoots pliant, covered with a lightish brown bark; leaves heart-shaped, serrate, veined, downy underneath; flowers white and umbelled, succeeded by bunches of red berries. Found wild in our own woods.

The *Opulus*, Water Elder, or Common guelder-rose, a native of our woods, with large globular umbels of white flowers at the end of the branches in great abundance; stem shrubby: a variety constituting a tree eighteen or twenty feet high.

The *lentago*, or Pear-leaved viburnum; the *cassinoides*, or Thick-leaved viburnum; the *nitidum*, or Shining-

leaved viburnum; the *lævigatum*, or Cassioberry-bush viburnum; the *nudum*, or Oval-leaved viburnum; the *prunifolium*, or Plum-leaved viburnum; the *dentatum*, or Tooth-leaved viburnum, it may be sufficient merely to mention.

The *Timus*, or Laurustinus; of this there are many varieties, both as imported from its native soil, the south of Europe, and as increased in its cultivated state.

All the species of viburnum, whether deciduous or evergreen, are durable in root, stem, and branches. They may all be propagated by layers; and will grow freely in the open ground all the year.

Guillemot. See **DIVER**.

GUINEA, an English gold coin, so called, because the gold from which it was first made, was originally imported from the coast of Guinea. Its value is twenty-one shillings. A pound troy of gold makes 44½ guineas: thus making standard gold 3l. 17s. 10½d. per oz., which is called the *mint price*. The guinea should weigh 129⅓ grains of standard gold, or 118⅓ grains of pure gold; but a guinea which weighs 5 dwts. 8 grains is a legal tender. The gold in guineas, &c. is eleven parts pure gold, and one part copper.

By an act of Parliament, passed in 1816, gold is declared to be the standard value or measure of property, by which the par of exchange, and the value of silver and other commodities should be estimated; and by the same law, gold is the only legal tender that can be made for any sum exceeding 42 shillings. See **GOLD**.

GUINEA-HEN, **PINTADO**, **GALLINA**, or *Numidia*, a genus of birds, consisting of four species, of which the *Melagris* is the only one which it is necessary to describe. This is specifically characterised by having double caruncles at the gape, and being without gular fold. There are two other varieties; one with the breast white, the other with the body entirely white.

The bill is of a reddish horn colour, head blue; the crown with a conic,

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compressed, blueish-red protuberance ; upper part of the neck, blueish-ash, almost naked ; lower part feathered, verging to a violet blue, body, blackish or greyish, with round white spots ; legs, grey-brown. Inhabits Africa and America, and is domesticated in most parts of Europe ; twenty-two inches long ; makes a harsh, unpleasant cry ; is noisy, restless, and turbulent ; moving from place to place, and domineering over the whole poultry-yard. The male and female resemble each other so that they can hardly be distinguished, the only difference is, that the wattles, which are blue in the former, are inclining to red in the latter ; there is also a difference in the noise which they very frequently make. The eggs are speckled reddish brown ; considerably smaller than those of the common hen. They lay many ; but if disturbed, shift their nest, which is generally on the bare ground.

This genus, in many respects, resembles the common poultry. Like them it goes in large flocks, feeding its young, and pointing out their food. It is, nevertheless, in this country, so careless and improvident of its young, that unless closely confined, it will soon lose them all. Their eggs should, therefore, be always hatched by an old and steady common hen, who will take much more care of the chickens than their own mother. By this method, they may be reared tolerably well. The chickens are extremely delicate, and sensible to cold, so much so, that exposure to the cold damp grass, or ground, for a very short period, destroys them. Their flesh is excellent food.

Guinea Pepper, or *Capsicum*. See **CAPRICUM**.

GUINEA-PIG, **RESTLESS CAVY**, or *Cavia cchaya*, one of the seven species of the genus **CAVIA**, or **CAVY**. This genus seems to hold a middle place between the mouse and rabbit tribes ; it moves slow with a kind of leaping ; does not climb ; feeds on vegetables ; dwells in hollow trees, or digs burrows. The *Paca*, or *Spotted cavy*, inhabits Guinea and Brasil, burrows on the banks of rivers ;

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and, when young, easily tamed ; about two feet long ; flesh very good ; a variety entirely white. The *Acuschy*, or *Olive cavy*, inhabits the woods of Guinea, half the size of a rabbit ; flesh good. The *Aguti*, or *Long-nose cavy*, is tawny brown ; inhabits South America, and the West Indies ; a foot and a half long ; flesh like that of a rabbit : three or four varieties. The *Aperca*, or *Rock-cavy* ; body above, tawney ash ; beneath, white ; a foot long, inhabits Brasil. The *Magellonica*, or *Patagonian cavy*, inhabits Patagonia ; resembles the otherspecies in manners ; flesh white and delicate. The animal weighs about twenty-six pounds. The *Capybara*, or *River cavy*, without a tail, inhabits the eastern parts of South America, swims and dives well ; feeds on fishes and vegetables ; gregarious ; grows fat ; flesh as food, tender ; two feet and a half long.

The *Cobaya*, or *Guinea-pig*, so called, is tailless, variegated with white and tawney, or brown ; inhabits Brasil, and is domesticated in Europe ; restless, grunting ; very prolific ; said to drive away rats ; flesh good. A foot long.

GUINEA-WORM, or *Filaria medinensis*, a worm, having an entirely pale body, found in both the Indies, and is frequent in the morning dew, whence it enters the naked feet of the slaves, and creates the most troublesome itchings, generally accompanied with inflammation and fever. It must be drawn out cautiously, by means of a piece of silk tied round its head : for if, by being too much strained, the animal should break, the part remaining under the skin grows with redoubled vigour, and often occasions a fatal inflammation. It is frequently twelve feet long, and not larger than a horse-hair.

GULL, or *Larus*, a genus of birds, comprehending twenty - one species, which are almost universally spread over the globe, accommodating themselves equally to the rigorous winters of the arctic regions, and to the excessive heat of the torrid zone. They have a straight bill, a little hooked at the tip ;

GUM

and a light body supported by large wings. The following are some of the chief :

The *Tridactylus*, Tarrock, or Kittiwake ; back whitish-hoary, quill-feathers white ; head, neck, belly, and tail, snowy ; wings, hoary. Inhabits Great Britain, Europe, Asia, and America generally. All the following species are found at times on our own coasts.

The *Canus*, or Common gull, is white ; back feathers hoary ; bill yellow ; seventeen inches long : inhabits Europe and America.

The *Marinus*, or Black-backed gull, is white ; back black ; 29 inches long ; inhabits Europe and America ; eggs blackish grey, with dark purple spots ; feeds on fishes, and young birds.

The *Fuscus*, or Herring-gull, is white ; back brown ; 23 inches long ; inhabits Europe, North America, and Asia : feeds on fishes, particularly herrings, to the shoals of which, fishermen are directed by these birds hovering over and following them : eggs three, whitish, spotted with black.

The *Risibundus*, or Laughing-gull, is whitish ; 15 inches long ; makes a laughing noise ; inhabits Europe and America ; eggs three, greenish-brown, spotted with tawney.

The *Parasiticus*, or Arctic gull ; body above, black ; beneath, temples, and front, white ; inhabits Europe, Asia, and America ; 21 inches long ; pursues smaller gulls till they have discharged what they have lately eaten, which it dextrously catches and devours before it reaches the water. Eggs cinereous, spotted with black.

The eggs of gulls are collected and eaten in some parts of Great Britain, as well as other countries ; but the flesh is, we believe, too rank for food. The feathers of gulls would, we presume, make good beds.

Gullet. See CESOPHAGUS.

GUM, or Gummi, a substance well known, contained in considerable quantities in the sap of many vegetables, and frequently appears as a spontaneous exudation. At the time of the year when

the juices of plants are the most abundant, it naturally exudes through the barks of trees, and thickens on the surface.

Gum Arabic (see the next article) may be taken as a specimen of pure gum. It dissolves in water, forming a viscid solution, from which it may be obtained in its original state, by evaporation. It is insoluble in alcohol, which therefore causes a white precipitate in its aqueous solutions. It is also insoluble in ether and oils ; it undergoes no change by exposure to air, and its aqueous solution does not ferment, but only becomes slightly sour, when kept for a long time.

Gum is decomposed by sulphuric and nitric acids ; but diluted sulphuric and muriatic acids dissolve gum without change. The alkalis, and solutions of the alkaline earths, also dissolve gum.

There are several varieties of gum, differing a little from each other. *Cherry-tree gum*, and *gum tragacanth*, do not dissolve in cold water, but in other respects their properties resemble those of gum Arabic. See the following articles.

GUM-ARABIC, ACACIA-GUM, or *Acacia gummi*, is obtained from the *acacia vera*, a tree growing in various parts of Africa, chiefly in the Atlas mountains. It has a hard withered aspect, does not rise many feet in height, and flowers in July. The gum exudes naturally from the bark of the trunk, and the branches of the tree, in a soft, nearly fluid state, and hardens in the air without losing its transparency : it appears to be the product of disease : for in the hottest seasons, and from the most sickly trees, the greatest quantity is procured. The best gum is obtained from Morocco, Ras-el-wed, and Bled-hummer. *Gum Senegal*, which is of exactly the same nature as gum Arabic, but in larger tears or drops, is obtained from various trees, but chiefly from two, one called *verreck*, which yields a white gum, the other called *nehuel*, which yields a red gum. Large quantities of gum Senegal are obtained from various parts of south-west Africa :

GUM

much of it from the neighbourhood of the river Senegal, whence its name. See *MIMOSA*.

Gum Arabic exerts no medical action on the living system: but is a simple demulcent, serving to lubricate abraded surfaces, and involve acrid matters in the *primæ viæ*. It is scarcely ever given in the solid form, unless to sheath the fauces, and allay the tickling and irritation which occasion the cough in catarrh and pulmonary consumption; in which case a piece of it is allowed to dissolve slowly in the mouth. It is chiefly used in the state of mucilage, which is ordered to be made thus, and is called by the London College, *mucilage of acacia*: Take of acacia gum powdered, four ounces; of boiling-water half a pint. Rub the gum with the water until it incorporates into a mucilage.

Gum Arabic and Senegal are used extensively for various purposes in the arts. They are also used by the Moors as food; and are no doubt, as a vegetable production, very nutritive.

GUM TRAGACANTH, or *Tragacantha*, is obtained from a shrub, the *astragalus verus*, a native of the north of Persia. It rises only 2 or 3 feet in height, on a stem about an inch in thickness. The leaves are small: the flowers, which appear in July, are small and yellow. The gum exudes in summer, more or less copiously, according to the heat of the weather, in tortuous filaments, which are allowed to dry on the plant before they are collected. The tragacanth which comes to this country, is brought from Persia, by way of Aleppo.

Good tragacanth is inodorous, impressing a very slightly bitter taste as it dissolves in the mouth; it has a whitish colour, is semi-transparent, and in very thin wrinkled, and wormlike pieces. It swells and softens in water, but does not form a homogeneous fluid mucilage, unless triturated after digestion with a large portion of water.

Gum tragacanth is demulcent, and may answer the purposes of gum Arabic, being even better adapted for al-

laying tickling coughs, and sheathing the fauces in catarrhal affections. The dose is from ten grains to one drachm, or more.

A compound powder of *tragacantha* is ordered by the London College thus: Take of tragacanth powdered, gum Arabic powdered, and starch, of each half ounce; of refined sugar three ounces. Powder the starch and sugar together, then add the tragacanth and gum Arabic, and mix the whole. This powder is used as a demulcent in hectic fever; and to allay the tickling cough of catarrh; in gonorrhœa, and strangury, it is combined with nitre; and in dysentery, with ipecacuanha. The dose is from half a drachm to three drachms, mixed with water, or any bland fluid.

Gum tragacanth is used for several purposes in the arts; it is used also to give a gloss to shoe, and other leather.

Gum Ammoniac. See **AMMONIAC**.

Assafœtida. See **ASAFOETIDA**.

Benjamin. See **BENZOIN**.

Copal. See **COPAL**.

Dragon. See **GUM TRAGACANTH**.

Elastic. See **INDIAN RUBBER**.

Elemi. See **ELEMI**.

Euphorbium. See **EUPHORBIVM**.

Galbanum. See **GALBANUM**.

Guaiacum. See **LIGNUM-VITÆ**.

Juniper. See **JUNIPER**.

Kino. See **KINO**.

Mastiche. See **MASTICHE**.

Myrrh. See **MYRRH**.

Olibanum. See **OLIBANUM**.

Opopanax. See **OPOPANAX**.

Sagapenum. See **SAGAPENUM**.

Sandarach. See **JUNIPER**.

Scammony. See **SCAMMONY**.

Senegal. See **GUM ARABIC**.

Tragacanth. See **GUM TRAGACANTH**.

GUM-BOIL, an affection of the gums, commencing with pain and inflammation, and sometimes terminating in suppuration. It is most frequently the consequence of tooth-ach. The best application to gum-boils, is a toasted fig: the fig should be cut into a slice about half an inch wide; and one

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such or more, long; the interior part should be held to the fire till it becomes brown, and immediately applied to the tumour, as hot as it can be borne; it should be renewed two or three times a day: the pain occasioned by this application will, frequently, be considerable, but it will induce, in general, a speedy suppuration; upon the evacuation of the collected matter, the pain ceases.

GUMS, in anatomy, the hard fleshy substance in both jaws surrounding the teeth, and by which they are kept firm in their sockets.

The gums frequently become spongy, and separate from the teeth. A constant use of tooth-powder, in which is contained a considerable quantity of myrrh, will be found serviceable; or pledgets of lint dipped in simple tincture of myrrh, and kept to the part, will be often of more advantage. When the gums are in this state, they should, however, be rubbed with caution. If scurvy be present, an acid vegetable diet, seems to promise the most effectual relief.

GUM-RESIN, a term applied to those substances commonly termed gums, which contain a portion of *gum*, properly so called, and also a *resinous* substance; the first being soluble in water, and the latter in proof spirit, or in rectified spirit of wine: myrrh, galbanum, asafetida, ammoniacum, &c., are gum-resins.

GUN, a fire-arm, or weapon of offence, which forcibly discharges a ball, shot, or other offensive matter, through a cylindrical barrel by means of gunpowder. Guns include cannon, artillery, &c.

The gun most commonly known is termed **MUSKET**, and when used for the purpose of killing birds, &c. a **FOWLING-PIECE**.

Various patents have been from time to time obtained for the construction of such weapons, but notwithstanding these and all the care and circumspection which have been hitherto adopted, not a winter passes in Great Britain,

GUN

without the bursting of guns, and other accidents, by which many lives are lost.

It were to be wished that heads of families and others, having influence in society, would exert their energies to counteract the mischiefs which the common and careless use of guns so often produces. The young and giddy should not be permitted to carry a gun at all; and, least of all, ought any one to use this dangerous weapon, merely as an instrument of *sport*. He who can take a pleasure in destroying animals for sport will, by no very difficult mental process we fear, accommodate his mind, particularly where glory is the watchword, to destruction of a higher order.

For the treatment of wounds occasioned by *gun-shot*, &c., see **WOUNDS**.

GUNPOWDER, an explosive mixture of nitre, charcoal, and sulphur, for the purpose of communicating to guns of every calibre a prodigious projectile power.

The proportions of the ingredients of gunpowder are varied according to the uses for which it is designed. The following are those usually employed:

	Common Gunpowder.	Shooting Powder.
Salt-petre	75 0	78
Charcoal	12 5	12
Sulphur	12 5	10
	Shooting Powder.	Miners' Powder.
Salt-petre	76	65
Charcoal	15	15
Sulphur	9	20

The latter contains the smallest quantity of salt-petre, as it requires less quickness or strength. The ingredients are perfectly mixed, moistened, beaten into a cake which is afterwards broken up, granulated, and, for the finest powder, polished by attrition.

The violence of the explosion of gunpowder depends upon the sudden production of gaseous matter, resulting from the action of the combustibles upon the nitre. Carbonic oxide, carbonic acid, nitrogen, and sulphuric acid, are the principal gaseous results,

and the solid residue consists of sub-carbonate, sulphate, and sulphuret of potash, and charcoal.

An ingenious method of preventing mischief arising from the explosion of gunpowder mills has lately been invented by Mr. JAMES MONK, and is described in the 37th Vol. of the transactions of the Society of Arts.

Gun-shot wounds. See WOUNDS.

Gunter's chain. See CHAIN.

GURNARD, or *Trigla*, a genus of fishes comprehending fourteen species, scattered through the seas of the globe, chiefly those of northern Europe, five of which frequent our own coasts. We shall notice a few :

The *Evolans*, or Flying gurnard, inhabits Carolina and South America.

The *Volitans*, or Flattering gurnard, inhabits the Mediterranean and Asiatic seas, and between the tropics.

Both these species possess somewhat of the faculty of the flying fish, limited in the same, or perhaps in a greater degree, and employed for the same purpose, that of enabling them to escape from the numerous enemies which beset them. Their flight is short ; for as soon as their wings dry they drop again into the water ; they often fall upon the decks of vessels, particularly those doubling the Cape of Good Hope. These fishes are seen in the Mediterranean ; but none of those frequenting our own coasts can rise from their native element.

The *Gurnardus*, or Grey gurnard, inhabits the seas of Europe, and is found on our own coasts. From two and a half to three feet long ; flesh very good.

The *Lyra*, or Piper, inhabits also our own coasts, nearly two feet long, and an excellent fish for the table.

The *Cuculus*, Red, or Cuckoo gurnard, inhabits the British seas, and Europe generally ; a foot long.

The *Hirundo*, Tub fish, or Sapphire gurnard, inhabits the British and Northern seas ; body greenish brown ; from two to three pounds weight.

The *Adriatica*, inhabits the Adri-

atic ; body red, with black spots ; 8 span long.

Gut. See ABDOMEN.

GUTTA SERENA, an abolition of the sight, without any apparent cause, or appearance of fault in the eyes. In every case it depends on an affection of some part of the optic nerve.

When it is owing to a decay, or wasting of the optic nerve, it does not admit of a cure ; but when it proceeds from a compression of the nerves by redundant humours, these may be, in some measure, drained off, and the patient relieved. For this purpose the body must be kept open with laxative mercurial pills. If the patient be young, and of a sanguine habit, he may be bled. Cupping, with scarification of the back part of the head, will likewise be of use. A running of the nose may be promoted by volatile salts, stimulating powders, &c. But the most likely means of relief are setons, issues, or blisters, kept open for a long time on the back part of the head, behind the ears, or the neck ; mercurial salivation has also been recommended. Electricity, or galvanism, may also be of service. Recent cases are more curable than those of long standing.

Another disease of the eye is the *Cataract*, which is a dimness or loss of sight from the interposition of an opaque film. It is an opacity of the crystalline humour, and generally takes place by imperceptible degrees ; it is sometimes the consequence of inflammation, blows, &c. In a recent cataract the same medicines are to be used as in gutta serena, and they will sometimes succeed. Barges of calomel, and a poultice of fresh hemlock to the eye, and a perpetual blister on the neck, have sometimes removed a cataract ; but in many cases there is no remedy but couching ; and this must, of course, be performed by the experienced surgeon.

Gut-tie. See CALF.

Gutter. See DRAINING.

GYMNASTIC EXERCISE, or

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GYMNASTICS, the art of performing exercises of the body, whether for defence, health, or diversion.

There is no doubt that under proper regulations the gymnastic art might be made exceedingly advantageous in preserving health. But as practised hitherto amongst mankind, the mischiefs which it has introduced have considerably overbalanced any good which has been derived from it.

The gymnastic exercises of the Greeks were running, leaping, throwing the quoit, wrestling, and boxing. But real or supposed improvements in the manners of European nations, have consigned almost all gymnastic exercises to the lowest portion of society; active feats, and sudden turns of the body, or tumbling, are confined to those who are paid for them; playing with the ball is, we believe, on the decline; leaping and foot-races, are limited to a few wagers; pitching the quoit seldom extends beyond the apprentice and the labourer; throwing the javelin is entirely discontinued; wrestling and boxing are confined to the vulgar, and the tournament, as well as the chariot race, are nearly forgotten. Some of these may doubtless be adopted with advantage, by those who do not like either vulgarity or gaming. But we think that to institute any amusement in which a contest for money is excited, would be exceedingly reprehensible. Other motives than money may surely be offered to stimulate the human mind.

Notwithstanding there would be no difficulty in inventing exercises which may be beneficial to health, yet surely those exercises must be the best where the labour of the muscles contributes not only to the health of the individual, but also to some other useful end. As society is at present constituted, a great deal of valuable time is wasted in a variety of idle, useless, and often injurious amusements: but, let LABOUR become *fashionable*, (and it should be fashionable, because it is necessary for the preservation of health,) and our complaints of ennui and want of amusement will be comparatively

GYM

rare. We are supposing, of course, that the human mind, generally, is suffered to keep pace with our improvements in education, and that not one person, ignorant of his moral and social duties, ought, with our present means of information, to exist in the British Empire. See EXERCISE.

The *Gymnasticon*, a machine invented by Mr. LOWNDES, which enables persons to exercise themselves in any wished for degree in their own chambers, in all parts of the body at once, or partially, as the case may require, appears well calculated to afford suitable degrees of exercise to sick persons, and may be of the highest importance and utility.

GYMNETRUS, a genus of fishes consisting of four species, inhabitants of the European and Asiatic seas. The two following are the chief:

The *Ascanii*, or Silvery gymnetrus, is speckled longitudinally with brown points. This extraordinary fish seems to have been unknown till within the space of a few years past. Its length is about ten feet, its diameter, which is equal throughout its whole length, is about six inches; the head short; mouth small, and eyes large. The colour of the whole body is a bright silver with a bluish cast. It is said to be generally seen either preceding or accompanying the shoals of herrings in the northern seas: hence it is popularly called *King of the Herrings*.

The *Blockii*, in its general appearance nearly resembles the preceding species; a native of India, but occasionally met with in the seas of Europe. Length eight feet or more; breadth ten inches and a half; thickness two inches and three quarters; tailless.

GYMNOTUS, a genus of fishes, consisting of nine species, chiefly inhabitants of the South American coasts; one of the Mediterranean sea: the following are the chief:

The *Electricus*, Electric eel, or gymnote, is blackish without dorsal fin; inhabits various parts of South America; from three to four feet long; has a remarkable power of inflicting an

GYPSUM

electrical shock whenever 't is touched. This may be conveyed even through a stick to the person who holds it; and is so severe as to benumb the limbs of such as are exposed to it. By this power it stupifies, and then seizes such small fish and animals as have ventured to approach it. It appears by dissection that both in the gymnotus and the *torpedo* (see *RAY*) are electrical arrangements which resemble certain forms of the voltaic apparatus: for they consist of many alternations of different substances. These electrical organs of the animal are much more abundantly supplied with nerves than any other part of the animal, and the too frequent use of them is succeeded by debility and death.

The *Albifrons*, or White-shouldered gymnote, inhabits Surinam; about a foot long.

The *Carapo*, or American gymnote; inhabits the fresh water rivers of America; from one to two feet long, flesh very good.

It is uncertain whether this or the preceding species possess any electric power: their general character induces us to suppose that they do.

GYPSUM, in mineralogy, a genus of calcareous stones, consisting of lime and the sulphuric acid. This genus is light, very soft, melting with difficulty in the fire. Exposed to a red heat it loses the water of crystallization, and falls into a white powder, commonly called *Plaster of Paris*, which being made into a paste with water soon becomes solid. Found chiefly in Europe, but one or two species, eighteen of which have been described, are found in Asia. The following are the chief:

The *Terreum*, or Farinaceous gypsum, is of a white colour, and powdery; hardly sinks in water; found in Saxony.

The *Alabastrum*, or Alabaster, is well known. Found in Derbyshire, on the shores of the Bristol Channel, Persia, Russia, Spain, Tuscany, Sicily, and other places, in stratified mountains. When pure, is softer than marble, and does not take a good polish.

The *Fibrosus*, or Sulphate of lime, Plaster of Paris, meagre and dry.

Three varieties; found in various parts of Europe in general.

The *Usuale*, or Lamellated gypsum: three varieties.

The *Selenites*, or Selenite, Selenitic spar. Found in most places in which are the two preceding species; crystals, generally, in six-sided prisms, terminated by two-sided, or four-sided summits; colour white, or grey.

Gypsum, in the shape of plaster of Paris, is used in the arts for forming casts, &c.; it is also used in the formation of the cornices, &c. of rooms.

In agriculture, the application of gypsum to crops of cultivated grasses, is often attended with great effects. The ashes of sainfoin, clover, and rye-grass, afford this substance in considerable quantities, and hence there is reason to believe that it is a necessary part of the woody fibres of these grasses. Cultivated soils, in general, contain it in sufficient quantities for the grasses which they produce; but where there is any deficiency, fields which have ceased to bear good crops of clover, and other artificial grasses, may, perhaps, be restored to their former fertility by the use of gypsum. It has been commonly used after being burnt; but the best practice recommends its being simply powdered. It should not be ploughed in, but merely scattered over the land. Eight or nine bushels per acre is the quantity usually employed.

Gyr-Falcon. See *FALCON*.

H.

HAB

HABEAS-CORPUS, a Latin term, literally implying *thou mayst have the body*. It originally applied to a writ of various uses, and of different importance; but now, in its more usual sense, it is the most celebrated writ in the English law: the act of Habeas Corpus, as it is called, 31 Car. II. c. 2, being considered one of the greatest bulwarks of our liberties.

The writs under this act are various. Many kinds are for removing prisoners from one court to another, &c. But the writ which forms so great a part of the liberty of the subject in all manner of illegal confinement, is the *habeas corpus ad subjiciendum*, commanding the person detaining a prisoner, to produce him, with the day and cause of his detention, to submit to whatever the judge or court awarding such writ, shall determine. This is a high prerogative writ, and therefore by the common law, issuing out of the court of King's Bench, not only in term-time, but in vacation, by a fiat from any of the judges, and running into all the King's dominions. And a man has now the benefit of the common law writ either in the King's bench, or the Common Pleas, as he chooses: in both courts it is necessary to apply for it by motion, as it does not issue of course, without shewing some reason for granting it. But if good grounds be shewn that the party is imprisoned without just cause, it becomes a writ of common right, and must not be denied, even though a man is detained by the highest authority.

Judges denying a habeas corpus, forfeit 500*l*. The officer refusing to obey it, or to deliver a true copy of the commitment warrant, is liable to a forfeiture of 100*l*.

This celebrated act has been subject to temporary suspensions, by authority

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of parliament, in times of riot and rebellion. The effect of such suspension is, that parties may be imprisoned at the pleasure of the government, and while such suspension lasts, they cannot insist upon a trial or discharge; nor can they afterwards bring their action against any party for false imprisonment.

HABIT, may be defined an aptitude or disposition either of mind or body, acquired by a frequent repetition of the same act.

Such is the imitative nature of our minds, particularly in early life, that habits of a *pleasurable* nature become interwoven, as it were, with our very existence; we contemplate them as belonging to ourselves so intimately, that we feel an irksome vacuity in their absence, merely because we have been habituated to them. How frequently, therefore, does it happen, that the most trifling circumstances decide the destiny of our future years, creating affections and aversions, which have the most lasting influence. Hence we find children sometimes make choice of the employment of their parents, or their neighbours, because it agreeably engaged the attention of their juvenile hours. But if, on the other hand, their minds are strongly impressed with the confinement, slavery, or any other disagreeable circumstances, attending the employment to which they are daily witnesses, they incline to the contrary extreme, contract an aversion, and give the preference to other pursuits, of the inconveniences of which they are ignorant.

The inferences which we are desirous of drawing from the force of habit is this: that parents and others, having the care of children, cannot be too careful in surrounding the young mind with such pleasurable circumstances as shall stimulate them to pursue whatever it is

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desired that they should pursue, not only with constancy, but with avidity. And when we find parents complaining that their children have not profited by their own admonition and example, there is too much reason to fear that, negligence, harshness, unkindness, or severity, has too often been the cause of the lamented dereliction of the child.

Hackney-couches. See COACH.

Haddock. See COD.

Hæmoptoe. See SPITTING of BLOOD.

HÆMORRHAGE, a flux of blood, arising most commonly without any external injury, such is the bleeding of the nose, the blood discharged from the lungs, the stomach, the piles, the uterus, &c.; the term hæmorrhage is, however, often applied to any preternatural discharge of blood, whether from the internal or external parts of the body, or from wounds.

When blood is brought up manifestly by vomiting, there can be no doubt of its proceeding from the stomach. An uneasy state of the stomach continually, for some time precedes the discharge: pain in the stomach, accompanied by anxiety, and a sense of oppression is, in general, felt just before the coming on of the hæmorrhage.

If the complaint is in consequence of a suppression of the menstrual, or hæmorrhoidal discharge, and is small in quantity, there may not be reason to apprehend much danger. But if the discharge be very considerable, and black grumous blood is discharged both by vomiting and by stool, the disease is alarming, and the best medical advice should be immediately obtained.

Blood discharged with the urine, may proceed from the kidneys, ureters, the bladder, or urethra. The part whence the discharge of the blood proceeds, is to be discovered by attending to the symptoms which preceded, and which accompany the discharge. In general it is a symptomatic affection of some disease, and by the cure of that only can it be removed.

For the treatment of hæmorrhages from the nose, lungs, piles, uterus, wounds, &c., see BLEEDING AT THE

HAI

NOSE, MENSES, PILES, SPITTING of BLOOD, and WOUNDS.

HÆMORRHAGE, in HORSES, from external injury, is most readily stopped by taking up the bleeding vessel and tying it; but when this cannot be done, the bleeding may generally be stopped by pressure; that is, by placing bolsters of linen, or tow, upon the wound, and binding them firmly down. Styptics are also employed for the purpose, and also for internal hæmorrhages. See STYPTICS.

Hæmorrhoids. See PILES.

HAIL, a substance well known, which falls from the atmosphere, and generally supposed to be frozen rain, or other masses of water, collected in the upper regions of the air.

HAIR. The hairs of the human body are thin, elastic, dry filaments, which grow out of the skin. They consist of a bulb under the skin, and a trunk which perforates the skin and cuticle. The colour of the hair varies: it is also differently named, according to its situation.

The hair of the head, particularly of females, is esteemed very ornamental. Frequent cutting of the hair is, however, supposed to be very advantageous to health; but care should be taken that the head be not deprived of a considerable quantity of hair at once, in such a state of the body, or of the weather, as to induce catarrh, or other disease: a neglect of this precaution has, sometimes, produced fatal effects. Shaving the head, in some diseases is also useful.

A variety of nostrums are constantly advertised for the growth of hair, the alteration of its colour, &c. They are almost universally bad, and should not be used. The best application for the hair is perhaps the following: take equal parts of olive-oil, or oil of almonds, and spirits of rosemary, to which may be added a few drops of oil of nutmegs. The hair may be rubbed with a little of this liniment every night.

The hair may, it is said, be made of a darker colour, by cutting it close to the head, and combing it every morn

HAI

ing and evening with a leaden comb : but we do not even advise this simple practice.

Hair forms a very considerable article of commerce, especially since the fashion of wearing wigs, or frontlets, has extended to the female sex.

The hair of beavers, hares, and other animals, is used, as is well known, in various manufactures, especially that of hats.

Horse-hair, is also an article of considerable use, in the manufacture of seats for chairs, sofas, &c., and also for garden-lines, cow-spans, &c. It is also esteemed by many persons superior to feather beds, being stuffed in bolsters, and mattresses, for the purposes of repose. But we cannot cordially assent to this opinion. See BED.

HAIR-POWDER, is generally prepared from starch, which after being thoroughly dried, is ground, and passed through a fine sieve. It is sometimes adulterated with alum and lime : more frequently with ground rice, or common flour.

The fashion of wearing hair-powder, among the ladies, is now entirely laid aside, and it would be extremely gratifying to us, could we announce that the gentlemen had wholly discarded it. The absurdity of the custom is so evident, that reasoning upon it is out of the question.

HAIR-WORM, or *Gordius*, a genus of worms, consisting of five species, as follow : the *aquaticus*, inhabiting soft stagnant water ; is pale brown, with dark extremities ; from four to six inches long ; twists itself into various contortions and knots, and if incautiously handled, will inflict a bite at the end of the fingers, and, it is said, occasion the complaint called a whitlow. It is vulgarly, but erroneously supposed to be produced by horse-hairs, accidentally dropped into the water. The other species are, the *argillaceus*, with a yellow body, found in clay, at the bottom of stagnant waters ; the *filum* is whitish, and found in the bark of old wooden water-pipes ; the *luteus*, with a white body, found in stagnant waters ; and

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the *arenarius*, found in Christian's bay, Norway. The guinea-worm has often been confounded with this genus.

Hake. See COD.

Halcyon. See KING'S-FISHER.

HALF-PENNY, a copper coin, of which two make a penny.

HALTER, a head-stall, by which a horse is fastened to a manger, when confined in a stable. Halters are of two kinds ; one prepared of hemp, being a hard twisted cord ; the other of leather, with throat-straps and huckles, nose-band, &c. This last is the safest and best, in every respect, and, although more expensive at first, is cheapest in the end.

HALTER-CAST, in farriery, an injury of the pastern, occasioned by the halter being entangled about the leg.

In severe injuries, the part should be poulticed at first, and, when the inflammation has subsided, it should be washed with a solution of sugar of lead or alum ; if it become hard and dry, the following liniment may be applied : take of olive-oil two ounces ; goulard extract four drachms ; shake them together.

Halting, in Horses. See LAMENESS.

HAM, the lower and back part of an animal's thigh, opposite to the knee, being the angle in which the leg and thigh incline to each other.

HAM, in domestic economy, denotes the thigh of a hog or bear, seasoned, prepared, and dried, so as to preserve it of an agreeable flavour.

The following method of preparing hams will be found, we believe, superior to any other.

Rub the ham, which should be, of course, perfectly fresh and sweet, all over with a little common salt ; let it remain in this state one night, in order that the blood may run off ; next, wipe it dry. Then take half a pound of brown sugar, four ounces of bay-salt, and two ounces of salt-petre ; let them be all finely powdered, mixed together, and thoroughly dried before the fire. One half of this mixture is to be rubbed well into the ham ; and the following day let the other half be rubbed in. Set it by in a cool place, in a pro-

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per vessel, and turn the ham every day for three weeks. Then, after draining the pickle from it, shake some bran over it, and hang it up in a chimney where wood is burnt, at a moderate distance from the fire. These quantities of salt and sugar are calculated for a ham of about ten pounds.

Of ham as an article of food, particularly if it be very fat, we cannot speak greatly in commendation. It is, however, an agreeable variety for persons in good health: but the dyspeptic should avoid it; although there are, occasionally, idiosyncrasies even among valetudinarians, to which ham is not repugnant.

HAMMER, a well-known tool, consisting of an iron head, fixed cross-wise upon a handle of wood. The best and most convenient hammers for domestic purposes, are those having claws opposite to the head, for the purpose of drawing nails, &c.

HAND, in anatomy, that part of the body consisting of the carpus or wrist, the metacarpus, and fingers.

Next to the brain, (in which reside our mental faculties,) and the organs of speech, the most important organs of the human body are the hands. By the hands are all our intellectual stores committed to writing, and diffused over the world: at the extremity of the fingers in the human hand, and on their inner surface, resides, in an eminent degree, the organ of Touch: by the fingers, most probably, the important science of numbers was first suggested; in a word, all the conveniences which we enjoy, all the arts we practise, and the sciences which elevate and dignify our nature, could never have been realised without the possession of the hand.

HAND, in the manage, the measure of a fist clenched, by which the height of a horse is computed. This measure is always four inches: consequently three hands are one foot; a horse of fifteen hands is exactly five feet in height.

Chapped hands are caused either by exposing them suddenly to the fire

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when they are very cold, or by washing them in hot water. Persons liable to chapped hands should always wash them in cold water, and never bring them suddenly to the fire when they are very cold. Worsted gloves should also be worn. See **CHAPS**, and **CHILBLAINS**.

Hanging. See **SUSPENSION BY THE CORD**.

HAPPINESS, that state of the mental and bodily faculties which consists in the uninterrupted enjoyment of the best and purest pleasures. As, however, no mortal ever yet enjoyed uninterrupted happiness on earth, we can only consider here the means by which the greatest portion of happiness may be attained. Happiness does not consist in the pleasures of sense, because they are of short duration; because they cloy by repetition; and because eagerness for intense delights takes away relish for others. Nor does it consist in exemption from certain evils such as labour, &c; because the mind must be employed; nor does it consist in greatness or elevated station: for the highest in rank are not the happiest. But happiness is to be estimated by the apparent happiness of mankind, which will be found to consist in the *exercise of the social affections; in the exercise of the faculties of body or mind for some useful end*: for happiness always appears to be accompanied with a state of hope; and those pleasures are most valuable which are most productive of engagement in the pursuit. To which may be added, as necessary to constitute happiness, a *prudent adaptation of habits; and health of body, and good spirits*. In a word, the practice of universal benevolence and virtue is the surest method to obtain happiness, which is "the pursuit of all that live."

HARE, or *Lepus*, in zoology, a genus of animals consisting of fifteen species. It is distinguished by two fore-teeth, upper double, the inferior ones less; the whole of the tribe are timid, live on vegetable, and run by a kind of leap; toes five before, four behind; the greater number of the species with

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tails ; a few without. Inhabits the four quarters of the globe. The following are the principal species :

The *Timidus*, or Common hare, of which there are three varieties ; one with horns one straw-coloured ; and the variety usually found, and hence a well-known animal. A large hare weighs eight pounds and a half. It is said that in the Isle of Man some have been known to weigh twelve. The length of the common hare, from the nose to the tail, is two feet. It inhabits all parts of Europe, most parts of Asia, Japan, Ceylon, Egypt, and Barbary. It is a watchful, timid animal ; always lean ; and runs swifter up hill than on even ground ; does not burrow. The rutting season is February and March. They breed often in the year ; go with young thirty or thirty-one days, and bring three or four at a time. The mother suckles the young about twenty days. They feed by night, on vegetables, and are very fond of the bark of young trees, which they eat off, particularly in snowy weather, when no other food is to be obtained. The flesh of the female is preferred to that of the male ; and that of those bred on hilly ground to those in marshes or wet places. Flesh very good. A perpetual animosity is carried on against them, not only by men and dogs, but also by cats, foxes, wolves, and birds of prey ; so that it is almost a miracle that any of them escape destruction. Those with horns may be regarded as monsters ; such have been found in Saxony, and near Astracan. The hare lives about seven years.

The *Variabilis*, or Varying hare, has a soft down upon it, which is grey in summer, with a slight mixture of black and tawny, but becomes white on the approach of winter ; by the middle of May of the next year it is again grey, at which time the hair is completely shed. Inhabits the Scotland mountains, Norway, Lapland, Russia, Northern Asia, and Hudson's Bay. The flesh of this species in its white state is very insipid.

The *Americanus*, or American hare,

has the neck and body mixed with ash, rust colour, and black. Fore legs shorter, and hind ones longer in proportion than those of the common hare. Eighteen inches long, and weighs from three to four pounds and a half. Inhabits all parts of North America. In New Jersey, and the colonies south of that province, it retains its colour during the whole year : but to the northward, on the approach of winter, they change their short summer fur, for one very long, silky, and silvery. At which time they are in the highest season for the table, and are of vast use to those who winter in Hudson's Bay. They breed once or twice a year, and have from five to seven young. They do not burrow, but breed in the grass ; their shelter is commonly hollow trees.

The *Cuniculus*, or Rabbit, of which there are five varieties : brownish grey ; white with red eyes ; black ; black and white ; silver grey with brown feet. The colour of its fur, in a wild state, is brownish ash. Inhabits the temperate and warm parts of Europe, and even the hottest parts of Asia and Africa ; burrows and breeds under ground ; is not originally British, but succeeds here admirably well ; will not live in Sweden and the northern countries, unless kept in houses. They are not natives of the western hemisphere, but have been carried thither and increase greatly in South America. They are very prolific ; breeding seven times in a year, and producing eight young at a time. They pair and never intermix with the common hare. The males are apt to destroy the young ; but, however, when able to shift for themselves, they pay great attention to their father ; so that, upon a call, he always puts himself at their head, and arrives first at the burrow or hole, and stands at the mouth till they have all gone in. They feed principally by night, or in the morning and evening. Flesh good.

The *Angorensis*, or Angora rabbit, is remarkable for its hair, and is a beautiful and valuable animal.

The *Saccatus*, or Hooded rabbit, has a double skin over its back, into which

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it can withdraw its head ; and another under its throat, into which it can withdraw its fore feet. Has small holes in the loose skin on its back, to admit light to its eyes when its head is covered. Body ash-coloured ; head and ears brown ; habitation unknown.

The *Tolai*, or Baikal hare ; fur of the same colour as the common hare ; size between the common and varying hare. Its fur is bad, and of no use in commerce ; nor does it agree in nature either with the hare or rabbit.

The *Capensis*, or Cape hare, has the crown and back dusky, mixed with tawney ; breast, belly, and legs rust coloured ; tail bushy. Size of a rabbit ; it inhabits the country for three days' march north of the Cape of Good Hope. It is there called the mountain hare, as it lives only, but does not burrow, in the rocky mountains.

The *Viscaccia*, or Peruvian hare, has the hair very soft, and of a mouse colour ; inhabits the colder parts of Peru. The hair was formerly spun and wove into cloth ; and, in the time of the Incas, was so fine as to be worn only by the nobility.

The *Brasilensis*, or Brazilian hare, is of the colour of the common hare ; a white ring round the neck ; lives in woods : very prolific ; does not burrow ; flesh very good. Found in Brazil and Mexico ; called there *Citli*.

The *Alpinus*, or Alpine hare, is only about nine inches long ; at first view the whole animal seems of a bright bay. Found in the Altaic chain, and extends to the lake Baikal, thence to Kam-schatka, and the Fox-isles. Inhabits always the middle region of snowy mountains. Sometimes burrows, but more commonly found in the crevices of rocks ; makes a noise like a sparrow. By wonderful instinct they make a provision against winter, by assembling in numbers, and collecting vast heaps of choice herbs and grasses, nicely dried, which they place either beneath overhanging rocks, or in the chasms, or round the trunk of some tree. The heaps are formed like ricks of hay, and are of various sizes ; sometimes of a

man's height, and many feet in diameter, but usually about three feet. The way to these heaps is marked by a worn path. They are not eaten as food by man, but are the prey of sables and weasels. They are also infected with the gad-fly, *œstrus leporinus*, which lodges its eggs in their skin, and often proves fatal to these feeble and defenceless, though industrious creatures.

The *Ogotona*, or Ogoton hare, is only about six inches long ; inhabits the same countries as the Alpine hare ; makes a noise, and collects its food for the winter somewhat similar to that species, except that, instead of amassing it in heaps, it is deposited in their burrows.

The *Pussilus*, or Calling hare, is also about six inches long. Inhabits the south-east parts of Russia. Their cry is like the piping of a quail, but deeper, and so loud as to be heard at the distance of half a German mile. They never go far from their holes ; feed by night, sleep little, and are easily made tame.

The fur of this genus of animals is of great use in the arts, particularly in the manufacture of hats, for which, except the beaver fur, it is the best material.

The flesh of the hare is universally esteemed, and is, doubtless, very nutritious ; and could we forget that the hare is generally obtained by being hunted by dogs, in *wanton sport*, we should feel less disposition to condemn the consumption of this food.

The flesh of the rabbit is by no means so good as that of the hare ; the flesh of the tame rabbit is still less so. The practice of bringing it to table smothered in onions may be agreeable to the robust and the epicurean, but the valetudinarian and dyspeptic must never consider such grossness a delicacy ; and if they should happen to do so, the stomach itself will soon furnish them with evidence to the contrary.

Hare-bell. See HYACINTH.

HARE-LIP, a natural defect in some part of the upper or under lip, so named from some fancied resemblance in the diseased lip to that of a hare.

The best time for the performance

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of the operation for the removal of the hare-lip in infants, is some months after they have been weaned, when they will have acquired strength to undergo the operation, and will be less liable to be attacked with bowel complaints, which often induce crying at an earlier period of infancy. In the performance of such an operation, a surgeon must be, of course, employed.

HARP, a musical instrument, consisting of a triangular frame, and the chords of which are distended in parallel directions from the upper part to one of its sides. Its scale extends through the common compass, and the strings are tuned by semitonic intervals. It stands erect, and is placed at the feet of the performer, who produces its tones by the action of the thumb and fingers of both hands on the strings.

HARP, the Æolian, a very pleasing musical instrument, invented by Kircher. It consists in a number of cat-gut, or wire strings, distended in parallel lines, over a box of wood, with a thin top, containing sound-holes. The strings are to be tuned in unison, and when the instrument is placed in a proper situation to receive a current of air, it produces, by the tremulous motion given by the wind to the strings, a soft, murmuring, and pleasing combination of sounds.

HARRIER, the common hound. See Dog.

HARROWGATE WATERS, are those chalybeate and sulphureous waters, which rise in the villages of High and Low Harrogate, in the county of York.

The most important is the sulphureous water, which is said to be more strongly impregnated with sulphur than any spring in Great Britain. When first drawn it is transparent, and emits a few air bubbles; and a strongly fetid sulphureous smell, similar to that of bilge-water; it is of a bitter, nauseous, and strongly saline taste. After being exposed for several hours to the open air, it becomes turbid, assumes a greenish colour, loses its sulphureous smell, and deposits sulphur at the bot-

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tom and sides of the vessel. The principal gas which escapes from it is sulphuretted hydrogen. It contains also some purgative salts, which, in most persons, produces a very sensible determination to the bowels. When first drunk, it causes a slight giddiness and head-ach.

It is used in obstinately costive habits, which accompany hypochondriasis, in scrofula, and particularly in cutaneous diseases, leprosy, &c. It is also a useful remedy for the piles, as well as for the round worms and ascarides, if taken in sufficient quantity to prove a brisk purgative.

The usual dose is three or four glasses, of about half a pint each, taken during the morning, at moderate intervals. It ought to be used cold, and fresh from the spring, if the stomach can support it.

HARROW, in agriculture, a frame of timbers crossing each other, and set with iron teeth.

The uses of the harrow are, to pulverize the ground for the reception of the seed, and to cover it when sown.

The construction of harrows must depend upon the nature of the soil. Those which are best calculated for strong clay, cannot be the most suitable for light sandy soils. The following are the principal rules regarding the formation of harrows. That not any two of the teeth should move in one track; that the tracks should be at equal distances from each other; and that the teeth should either be round, or perhaps with a sharp edge bent forward, like so many coulters, as they make themselves cleaner than when they are square, or of any other shape, and work easier after the horses. The teeth of harrows are frequently made of unequal lengths, the front row being about one inch shorter than the first, so that each row backwards, is about half an inch shorter than the one which precedes it. Where crops are drilled, an instrument, called *the drill-harrow*, is found a very great improvement. It thoroughly cuts the weeds in the intervals, and harrows them up to the top,

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in a very complete manner. The large, or what is called the *brake-harrow*, is also of great use in the cultivation of rough land.

HART, in natural history, an obsolete term for stag.

HARTELL-WATER, a chalybeate water, arising from a mountain of the same name in Scotland, which has been found serviceable in disorders of the stomach and bowels, bloody-flux, bloody-urine, immoderate flow of the menses, or their suppression, fluor-albus, gleet, &c. It has also been applied externally, to old and languid ulcers. A pint is the dose usually taken in the course of the day.

HARTSHORN, the horn which grows upon the head of the common deer, stag, elk, &c.

The shavings of hartshorn contain 97 parts of gelatine in 100, and are used for the purpose of making jelly, which, consisting of gelatine and water, is, of course, very nutritious. Hartshorn shavings are very often, if not always, adulterated with bone-shavings, from which they are not easily distinguished: bone-shavings are, however, generally more porous and friable than hartshorn-shavings.

Burnt hartshorn, as a medicine, is of no importance whatever.

A *spirit of hartshorn* is kept in the shops; but it is generally nothing more than a solution of ammonia, scented with a fetid animal oil. See **AMMONIA**, and **SAL AMMONIAC**.

A *salt of hartshorn* is also kept in the shops, but it is now nothing more than the carbonate of ammonia (*see ammonia*) scented also with animal oil.

An *oil of hartshorn*, called also *animal oil*, is obtained from horn or bones, and occasionally kept in the shops: it is esteemed antispasmodic, and sudorific, but is very little employed. The dose is from ten to twenty drops taken in water.

HART-WORT, **THOROUGH-WAX**, **HARE'S EAR**, or *Bupleurum*, a genus of plants, consisting of twenty-four species, all, excepting two or three, indigenous to the Cape, natives of Eu-

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rope; two of them, the *rotundifolium* and *tenuissimum*, common to our hedges and marshes. The *fruticosum*, or Ethiopian Hart-wort, is the species most frequently cultivated in our gardens. It has beautiful sea-green leaves and yellow umbel flowers at the end of the branches. It may be propagated by cuttings.

HART'S-TONGUE, or *Scolopendrium*, a genus consisting of one species only, the *scolopendrium vulgare*. It consists of long, narrow, bright green leaves, set on hairy pedicles, and nipt at the bottom; it has no stalks, nor does it manifest any flowers; the seeds are a fine dust found on the backs of the leaves. It is perennial, and found at all times of the year, in moist shady and stony places, in various parts of this country. It was formerly recommended for various diseases, but is quite unknown in modern medicine.

HAT, a covering for the head, and made of various materials: such as silk, oil-cloth, straw, and leather, but chiefly of wool, and the fur of various animals, viz. hares, rabbits, kids, beavers, &c.

Numerous patents for the manufacture of hats, or rendering them water-proof, have been obtained, but none of them are such as demand particular notice. The hats which have a covering of silk, and are water-proof, have been occasionally worn, but we cannot speak in their commendation. The best hats with which we are acquainted, are those commonly called *stuff hats*, the texture of which consists of a mixture of rabbits, or hare and beaver fur, and which are moderately elastic, not heavy, and which yield to the shape of the head, so as to be easy and comfortable in the wearing; and, when wetted, dry without becoming stiff, and the fur of which assumes its downy appearance with moderate brushing.

Straw hats are very pleasant and agreeable for the summer; so also are white stuff hats.

HATCHING, the maturing of fecundated eggs, whether by incuba-

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tion and warmth of the parent bird, or by artificial heat, so as to produce young chickens alive.

The art of hatching chickens by means of ovens has long been practised in Egypt. It has also been attempted in France, where the ingenious M. Reaumur, reduced the art to certain principles. The degree of heat necessary for the purpose of hatching chickens, is that marked 96 on Fahrenheit's thermometer. This degree of heat is nearly that of the skin of the hen, of the skin of all other domestic fowls, and probably of all other kinds of birds. M. Reaumur invented a sort of low boxes, without bottoms, and lined with furs. After hatching it is necessary to keep the chicken for some time in a room artificially heated, and furnished with these boxes, into which the chicken will readily take shelter; afterwards they may be safely exposed to the air in the court-yard, in which it may not be amiss to place one of these artificial parents, to shelter them, should there be occasion for it; and, to save the trouble of attending them, capons may be taught to watch them as hens do; the same office may also be taught to and performed by cocks.

To facilitate the process of hatching, an apparatus, called an artificial mother, was some time since invented, and the inventor rewarded by the Society of Arts. But we are not aware that the practice is adopted, except for amusement, in this country: for when a quantity of poultry fully equal, and even superior to the demand, may be raised by natural means, as it can be in this country, there is no adequate motive for adopting the artificial process.

HATRED, one of the antipathetic passions, implying a state of mind the opposite to love.

The hatred or dislike which we feel to pain, or to moral misconduct, are antipathies which are perfectly justifiable, provided, in the latter instance, care be taken to separate the *conduct* from the individual; but when hatred becomes malevolence, and is directed towards *persons* instead of things, it is then a

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mischievous and deplorable passion. If love, or, in other words, benevolence, confers the most delightful emotions, what pain and misery must accompany hatred, which is its opposite? From the malignity of hatred, the mind of man must be free, or he must be miserable. He who desires therefore to be beloved, must deserve to be beloved; and in no other way can he be so but by becoming amiable and benevolent himself: to this end forbearance, and a charitable interpretation of the motives of others, most essentially contribute.

Haulm. See **STRAW**.

Haw. See **THORN**.

HAW, in the anatomy of the horse, a nictitating membrane of the horse's eye, common to him and several other quadrupeds; from its enlargement, when inflamed, some farriers have regarded it as a morbid production, and have absurdly advised its removal.

Hawk. See **FALCON**.

HAWK-MOTH, or *Sphinx*, a genus of insects consisting of one hundred and seventy-five species, of which fifteen or sixteen inhabit our own country, the rest are scattered over the different quarters of the globe. They fly abroad only in the morning and evening, are very slow on the wing, and often make a humming noise; they extract the nectary of flowers with their tongue; the larva has sixteen feet, and is pretty active: that of the *zygæna*, is thick, fat, and covered with short hairs; of the *sesia* generally naked; the others have generally a sharp, stiff, erect horn behind. The pupæ is quiescent. The following are the chief.

The *Orcellata*, with angular wings, lower ones rufous, with a blue eye, inhabits England and Europe, generally on the willow.

The *Atrophos*, or Death's-head moth, has entire wings; the lower ones yellow, with two brown bands; abdomen yellow with black belts. Both the insect and the larva are highly beautiful; the latter is principally found on the potatoe and the jasmine; these plants being its favourite food. The most remarkable part of this insect is,

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the representation of a death's head upon the upper part of the thorax. When hurt this animal utters a dismal cry, like a mouse.

The *Ligustri* is found on the privet, lilac, poplar, and some other trees. The larva is green; the pupa brown; the perfect insect has entire wings; lower ones rufous, with three black bands; belly red with black belts. This and the two preceding, retire under ground to change into their pupa state.

The *Fillipendulæ*, is found on the drop-wort. Does not retire under ground, but incloses itself in an oval shining yellow web of silk, attached to a grass spike, in order to assume the pupa state.

The most certain method of preventing the depredations of these insects, consists in collecting the leaves which they inhabit, and crushing the insects; afterwards the trees may be washed with a mixture of lime-water, and a decoction of tobacco-leaves.

HAWK-WEED, or *Hieracium*, in botany, a genus of plants, comprising sixty-nine species, mostly natives of Europe, a few of America; and ten indigenous to the woods, shades, or mountains of our own country; of which the two most common are the *pilosella*, found in our pastures, and known by the name of mouse-ear; and the *aurantium*, more frequently met with in Scotland, and vulgarly denominated Grim the collier.

The most beautiful sorts of this genus, and those most worthy of cultivation in gardens, have perennial roots, and may be propagated by seeds sown in March, upon a border with an eastern aspect. When strong enough to be removed, which they will be about the beginning of June, they should be transplanted into a shady border of undug ground, at the distance of six inches asunder. If the weather be dry, they must be watered till they have taken root, after which they will require no other attention but to be kept clean from weeds. In the autumn they should be transplanted where they are to remain: the following summer they will

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produce flowers and seeds: the roots will continue some years, if not planted in a rich moist soil.

They may also be propagated by offsets, or parting the roots in autumn.

HAWKERS and **PEDLARS**, are such dealers or itinerary chapmen as travel to different fairs or towns, with goods or wares, and are now placed under the control of the commissioners of hackney coaches; by whom they are licensed for that purpose.

A hawker trading without a license, or otherwise than shall be allowed by such license, or who shall refuse to produce the same, upon demand by any justice, mayor, constable, or other officer of the peace, where he or she shall so trade; or by any officer of excise or customs; or by any person to whom goods are offered for sale, shall forfeit £10, and for non-payment thereof shall suffer as a common vagrant.

No *wholesale* trader, selling goods, or wares, or manufactures of Great Britain, is to be deemed a hawker. Nor are persons retailing coals hawkers.

Haw-thorn. See **THORN**.

HAY, any kind of grass cut and dried for fodder.

In the cutting of grass crops for the purpose of being converted into hay, it is necessary that they should be in the most suitable state of growth and maturity for affording the best and most nutritious fodder. With this view, they should not be cut at too early a period, nor be suffered to stand too long: in the former case there will be considerable loss in the drying, from the produce being in so soft and green a condition; and in the latter from a large proportion of the nourishing properties being expended in the perfection of the seed; and more especially will this be the case if, when the hay is dried, the seeds should be so ripe as to fall out of it. It is probable, therefore, that grass cut about the time it becomes in full flower, will make the best and most nutritious hay. But it sometimes happens, when the crop is very thick upon the ground, that the bottom parts become of a yellow colour, before flowering fully

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takes place ; under such circumstances, it will always be most advisable to mow it as soon as the weather will permit. And where grass is very tall, as is often the case in moist meadows, it is liable to fall down and lodge, by which the same effects are produced. In this case also, the mowing should be performed as soon as possible. The usual time of cutting for hay in the first crop is, from about the middle of June to the beginning of the following month, according to the nature of the land, and as the district is more early or late. But, in the vicinity of London, grass is frequently cut as early as the first of June.

As the mode of making lay in the county of Middlesex is considered the most systematic and perfect of any hitherto known, we shall here give a succinct account of it.

In order that the subject may be more clearly understood, we shall relate the particular operations of each day during the whole of the process, from the moment the mower first applies his scythe, to that in which the hay is effectually secured.

When the grass is nearly fit for mowing, the Middlesex farmer endeavours to select the best mowers, in number proportioned to the quantity of his grass, and the length of time it would be advisable to have it in hand ; which having done, he lets it out, either as piece-work, or to be mown by the acre : each man mows from one acre and a half, to one acre and three quarters per day ; some will mow two acres per day.

He also provides five hay-makers (men and women) to each mower. The mowers usually begin their work at three, four, or five o'clock in the morning, and continue to labour till seven or eight in the evening, resting an hour or two in the middle of the day.

Every part of the operation of hay-making is carried on with tools, except clearing the ground, which is done by rakes, and loading the carts, which is done by hand.

First day. All the grass mown before nine o'clock in the morning is ted-

ded, in which great care is taken thoroughly to loosen every lump, and to strew it evenly over all the ground. Soon afterwards, it is turned with the same degree of care and attention : and if, from the number of hands, they are enabled to turn the whole again, they do so, or at least, as much of it as they can, till twelve or one o'clock, at which time they dine. The first thing after dinner, it is raked into what are called *single wind-rows* ; and the last operation is, to put it in grass-cocks.

Second day, commences by tedding all the grass mown on the first day after nine o'clock, and all that was mown this day before nine o'clock.

Next, the grass cocks are well shaken out into staddles, or separate plats, of five or six yards diameter. If the crop should be so thin and light as to leave the spaces between the staddles large, such spaces must be raked clean, and the raking mixed with the other hay, in order to its ail drying of a uniform colour. The next operation is, to turn the staddles, and after that to turn the grass tedded in the first part of the morning, once or twice, in the manner described for the first day. This should all be done before twelve or one o'clock, so that the whole may be to dry while the work-people are at dinner. Immediately after dinner, rake the staddles into *double wind-rows* ; next rake the grass into single *wind-rows* ; then the double wind-rows are to be put into *bastard-cocks* ; and lastly, the single wind-rows are to be put into grass-cocks.

Third day. The grass mown, and not spread on the second day, and also that mown in the early part of this day, is first to be tedded in the morning ; then the grass-cocks are to be spread into staddles as before, and the bastard-cocks into staddles of less extent. These lesser staddles though last spread are first to be turned, then those which are in grass-cocks ; and next the grass must be turned once or twice, before twelve or one o'clock, when the people go to dinner, as usual. If the weather has proved sunny and fine, the hay

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which was last night in bastard-cocks, will this afternoon be in a proper state to be earned; but if the weather should have been cool and cloudy, probably no part of it will be fit to be earned. In the last case, immediately after dinner, let that which was in the cocks the last night, be raked into double wind-rows; and the grass, which was spread in the morning from swaths, into single wind-rows. After this, the hay, which was the last night in bastard-cocks, must be made up into full-sized cocks, care being taken to rake the hay up clean, and to put the takings upon the top of each cock. Next the double wind-rows are to be put into bastard-cocks, and the single wind-rows into grass-cocks, as on the preceding days.

Fourth day. On this day the great cocks are usually earned before dinner. The other operations of the day are such, and in the same order, as before described, and are to be continued daily till the harvest is completed.

In the course of hay-making, the grass should, as much as possible, be protected both day and night, against rain and dew, by cocking. Care should also be taken to proportion the number of hay-makers to that of the mowers: so that there may not be more grass on hand at one time, than can be managed according to the foregoing process: twenty hay-makers (of which number twelve may be women) to four mowers, will be generally found the best number.

It is particularly necessary to guard against spreading more hay than the number of hands can get into cock the same day, or before rain. In showery and uncertain weather, the grass may sometimes be suffered to lie three or four, or even five days in swath; but before it has lain long enough for the under side of the swath to become yellow, which if suffered to lie long, will be the case, particular care should be taken to turn the swaths with the heads to the rakes. In this state it will cure so much in about two days, as only to require being redden a few hours when the weather is fine, previously to

its being put together and carried. In this manner hay may be made, and put into the stack, at a small expense, and of a moderately good colour; but the tops and bottoms of the grass are insufficiently separated from it.

At every vacant time, whilst the stack is carrying up, the men are employed in pulling it with their hands into a proper shape, and about a week after it is finished, the whole roof should be properly thatched, and then secured from receiving any damage from the wind, by means of a straw rope extended along the eaves, up the ends, and on each side of the stack. The ends of the thatch are afterwards cut evenly below the eaves of the stack, just of sufficient length for the rain water to drip quite clear of the hay. When the stack is in a situation which may be suspected to be damp in the winter, a trench of about six or eight inches deep, is dug round, and nearly close to it, which serves to convey all the water from the spot, and renders it perfectly dry and secure.

In some districts, before the stack is covered with thatch, it is customary to cut out in a sloping direction, the hay at the bottom, all round the stack, in order to keep the under part more effectually dry: this is, certainly, a very good method. The hay so cut out, is placed on the top of the stack.

It is computed that 400lbs. of grass will make about 100lbs. of hay, by the time it is laid on the stack; this weight is further reduced by fermentation and evaporation, in about a month, to about 95lbs., and between this weight and 90lbs. the hay continues, we presume, through the winter.

Hay-barns, are of considerable utility, where large quantities are to be preserved, particularly during a catching and unsettled harvest.

In the neighbourhood of London, the *weighing and binding of hay* are of no trifling moment. A Mr. BRACKWAY, of Lewisham, has contrived an ingenious machine for this purpose, which is highly deserving the attention of those who are interested in this mat-

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ter. A description of this machine, with plates, will be found in the 37th vol. of the Trans. of the Society of Arts.

Should hay-stacks become so hot as to be likely to take fire, they ought to be turned, or spread out again till the superfluous heat is gone off. Some cut holes into the centre of them, but it is, generally, a very inefficient method, and not to be depended upon.

HAY-TEA, is made by pouring water on good fresh hay, covering the vessel up closely and letting it remain till all the virtues are extracted.

Hay-tea has been recommended for supporting calves, where there is a deficiency of milk. We think, however, that a decoction of hay made by boiling four pounds of hay in four gallons of water for an hour or more, then to strain off the liquor, and boil it down to one gallon, would yield a much more nutritious liquid. Indeed, we have no doubt that a strong decoction of hay may be of great service in some diseases of cattle when they cannot take solid food.

HAZEL-NUT-TREE, or *Corylus*, a genus of well-known plants, consisting of three species as follow :

The *Avellana*, possessing two varieties: one the common hazel-nut, found wild in the woods and hedges of our country; the other the cultivated filbert, with a calyx larger than the ripe nut.

The fruits of both varieties are much eaten in England: they are nevertheless difficult of digestion, and often pass the bowels very little altered; if, however, they are well chewed, they give out a nutritious oil. An oil is also obtained from the wood of this tree, which is said to be efficacious against the tooth-ach, and it is also said that it kills worms.

The *Rostrata* is a native of North America: but met with not unfrequently in our own gardens; it has oblong heart-like acute leaves; branchlets glabrous; calyx of the fruit beaked.

The *Columna* is found wild about Constantinople, having linear stipules roundish nuts.

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The filbert and hazel-nut grow almost in any situation and soil, but they are not prolific in a moist clayey one. They are propagated by suckers, which may be planted in the autumn after the fall of the leaf, or at any time in open weather during the winter.

The uses of the wood are various: it is employed for poles, hoops for casks, spars, hurdles, handles for implements of husbandry, walking sticks, fishing rods, &c. Where beautiful specimens are required, for veneering or staining, the roots of this tree are preferable to the branches. In Italy the chips are used for fining turbid wines, and in countries where yeast is scarce, the dried twigs soaked in the fermenting liquor, are used as a substitute for that article.

Painters and engravers prepare a charcoal for drawing outlines from the wood of this plant thus: pieces of dried hazel about 4 or 5 inches long, and the thickness of the finger, are put into a pot filled with sand, and the top is closely covered with clay: the pot is then placed in a potter's oven or otherwise exposed to a sufficient degree of heat to convert the sticks into charcoal. This charcoal draws freely and is easily effaced with Indian-rubber.

HEAD, or *Caput*, in anatomy, the superior part of the body placed upon the neck, containing the *cerebrum*, *cerebellum*, *medulla oblongata*, &c. It is divided into the face and hairy part. The common integuments of the head, are called scalp. See **BRAIN**, **FACE**, and **SKULL**.

The common maxim of *keeping the head cool*, except under peculiar circumstances, is not sufficiently attended to even at this enlightened period. Except infants, during the first few weeks of their existence, old persons, and persons labouring under peculiar diseases, the human head in this climate requires little covering: that of young persons indeed none at all. But exposure of the head to the powerful rays of the sun, or very inclement weather, common sense prompts us to avoid.

HEAD-ACH, or *Cephalgia*, a pain-

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ful sensation in the head, produced by various causes. Head-ach is in general only a symptom of disease. It may sometimes arise from effusions of blood on the brain, or by ulcers in that sensible organ. But the more common causes of head-ach are those disorders of the digestive organs, accompanied with dyspepsia, flatulence, costiveness, &c. Hence hypochondrical and hysterical patients are very much troubled with this complaint. Mental agitation, whether painful or pleasurable, as well as excessive employment of the mind, often occasion head-ach.

When, therefore, any one is attacked with head-ach, if it cannot be accounted for from obvious causes, we may be pretty certain that it arises from some derangement of the digestive functions, or of the alimentary canal. If it arise from costiveness, the compound colocyath pill, or Scots Pills offer the best remedy. If from improper food or drink taken into the stomach, exercise in the open air will often be of great service. It sometimes happens that head-ach alternates with pain and distention of the stomach; in some cases of this kind, when the front part of the head has been extremely hot, we have found cloths wetted in cold water, and laid over the whole front of the head, to abstract the heat, give much relief; some apply ether, alcohol, &c. to the forehead and temples, which by their quick evaporation have a similar effect; but cold water appears to answer the purpose equally well. What is said relative to food and drink, under appetite and dyspepsia, should be carefully attended to: for without such attention, patients, labouring under this complaint, will often suffer, and scarcely ever be free from it. If the head-ach arise from a fulness of the vessels of the head, the application of leeches may be of service; but in such cases a medical attendant should be consulted.

Snuff may in some cases occasionally be of service, but upon the whole, we think the practice of snuff-taking should be avoided; as whatever good may be derived from snuff when used medicinally,

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from the *habit* of snuff-taking, no benefit whatever can be derived; and it is besides a habit so dirty and disgusting that it ought to be discountenanced.

HEALTH, a proper disposition of the several parts of the body and mind, so that their respective functions operate without pain, inconvenience, or impediment.

The continuance of good health depends principally on air, food, exercise, the passions, evacuation, retention, sleeping, and waking. Moderation, however, in the use of all our functions, both bodily and mental, is essentially necessary to preserve this invaluable blessing; in addition to which, cleanliness ought not to be neglected. Many of the diseases of the lower classes of society are aggravated, if not generated, by the mere neglect of cleanliness; hence those who have influence with their poorer neighbours, cannot too strongly insist upon an attention to cleanliness, as a powerful means for the preservation of health.

HEARING, the sense or faculty of perceiving sounds. See DEAFNESS and EAR

HEART, in anatomy, a hollow muscular viscus, situated in the cavity of the pericardium, in the left side of the thorax; it is the centre of the circulation of the blood. It is divided internally into a right and left *ventricle*: these are divided by a fleshy septum, called *septum-cordis*. Each ventricle has two orifices; the one auricular, through which the blood enters; the other arterious, through which the blood passes out. These four orifices are supplied with valves. There are two cavities adhering to the base of the heart, called *auricles*. The right auricle is a muscular sac, in which are four apertures, two of the *venæ cavæ*, an opening into the right ventricle, and the opening of the coronary vein. The left is a similar sac in which there are five apertures, viz. those of the four pulmonary veins, and an opening into the left ventricle. The blood-vessels of the heart are the *aorta*, which arises from the left ventricle; the *pulmonary artery*, which originates from the right ventricle; the four pul-

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monary veins which terminate in the left auricle; the *venæ cavæ*, which evacuate themselves into the right auricle; and the coronary arteries, which arise from the aorta, and are distributed on the heart; and the coronary veins, which return the blood into the right auricle. The nerves of the heart are branches of the eighth and great intercostal pairs. But from some late experiments the heart does not appear an organ of a very sensible kind, compared with other parts of the body.

The heart of the fetus differs from that of an adult in having a *foramen ovale*, through which the blood passes from the right to the left auricle; and a *canalis arteriosus*, through which it is conveyed from the pulmonary artery to the *aorta*; a third part of the whole blood passing through this opening into the system at large, without any communication whatever with the lungs, and about half the blood that is thrown from the right ventricle into the pulmonary artery; the remaining third passing from the right to the left auricle, through the medium of the foramen ovale. See ARTERY, BLOOD, and LUNGS.

HEART, INFLAMMATION OF THE, is attended with all the symptoms of inflammation of the lungs, but in a higher degree; it is besides said to be accompanied with hydrophobic symptoms, fainting, palpitation of the heart, a seeming madness, a sunk and irregular pulse, watery eyes, dejected countenance, and a dry and black tongue.

This complaint is always attended with great danger, and unless it quickly terminates, must prove fatal. Bleeding is therefore necessary, in as great a degree as the patient can possibly bear; and every other mode of cooling and lowering the general heat and inflammation must be adopted. But a physician, in this complaint, should be at once consulted.

HEART, PALPITATION OF THE, is sometimes so violent that it may be heard at a considerable distance. It may proceed from a bad conformation of the heart itself, or some of the large

vessels. It may be also occasioned by wounds, or abscesses in the heart; or it may proceed from polypus concretions, or ossifications of that viscus; or from plethora, fear, or spasmodic affections of the nervous system. It may be also produced by a tight lacing, or cincture of the body.

When it proceeds from diseases of the heart, or large vessels, it is absolutely incurable. In spasmodic cases, antispasmodic medicines, such as ether, ammonia, opium, &c. may be of service; and if the patient be plethoric, bleeding may remove the disorder. If it proceed from a tight lacing or cincture of the body, such lacing or cincture must be removed, or no relief can be expected. Persons subject to palpitation of the heart, should pay a strict attention to diet: all flatulent food and drink must be carefully avoided.

HEART BURN, or Cardialgia, one of the many symptoms of dyspepsia or indigestion, distinguished by an acid, burning sensation rising from the stomach into the mouth, sometimes accompanied with nausea, sickness, flatulency, and head-ach.

We have already, under ALIMENT, APPETITE, and DYSPEPSIA, anticipated much of what we have to observe relative to this complaint, and to these, therefore, we request the reader at once to refer. In acidities of the stomach, arising from pregnancy, and others, in which it might not be desirable to wait for the slow operation of a cathartic, the carbonate of magnesia, calcined magnesia, or carbonate of potash, may be given in doses suitable to the nature of the case, and the age and sex of the patient. Sometimes large doses of cold water will also be of service. Pregnant females will often find it necessary to take large doses of magnesia in order to remove the acidity with which the stomach abounds; half a drachm calcined magnesia, or two drachms, or even more, of the carbonate, may in such cases be taken for a dose. But the constant use of magnesia should, nevertheless, be avoided. It is apt to

clog the bowels, and has sometimes produced unpleasant consequences.

When oleous matter, not acid, abounds in the stomach, large draughts of cold water may be drunk; but in this case purgatives are the best.

Heart's Ease. See VIOLET.

HEARTH, the floor of the fire-place of a room. Where the fire is not made immediately upon the hearth, stones of various kinds, or even bricks, may be used for it; but where the fire is intended to be made on the hearth, the best materials for the purpose are slates closely set on edge, as they most effectually resist the action of the fire; in such cases the back of the fire-place should also be of the same material, and be set in the same way.

HEAT, in natural philosophy, one of the effects of fire, or caloric, indicated by an increase of temperature, and the sensation it produces upon the organs of feeling.

Under the article cold we have stated many of the properties of heat, to which, therefore, we refer. Heat may, however, be considered as a power opposed to attraction; for it tends to separate the particles of bodies; whenever a body is heated it is also expanded. Different bodies expand differently when equally heated. The metals are the most expansible solids; but among them zinc expands more than iron, and iron more than platinum. Liquids differ also in their relative expansibilities; ether is more expansible than spirit of wine, spirit of wine more than water, and water more than quicksilver; Those liquids are generally most expansible which boil at the lowest temperature. As heat increases the bulk of bodies, it is obvious that change of temperature is constantly producing changes in their density or specific gravity. If we apply heat to the bottom of a vessel of water, the heated part expands and rises, while a cold or denser stratum occupies its place. In air similar currents are continually produced; the vibratory motion observed over chimneys, pots, slated roofs, and at the surface of the earth when heated by the sun, de-

pends upon this circumstance. The warm air or water made gaseous, rises, and its refracting power being less than that of the circumambient colder air, the currents are rendered visible by the distortion of objects viewed through them.

There is only one strict exception to the general law of expansion by heat, and contraction by cold; this is in the case of water, which expands considerably when it approaches its freezing point. This anomaly in respect to water, is productive of very important consequences in preserving the depths of rivers and lakes of a temperature congenial to the inhabitants. See WATER and ICE.

The capacities of bodies for heat have considerable influence upon the rate at which they are heated or cooled. Those bodies which are most slowly heated and cooled have generally the greatest capacity for heat.

Heat, in a word, is one of the most powerful agents in nature. By heat many of the phenomena of the seasons are unquestionably produced. By heat bodies become liquid or gaseous in proportion to the quantity of heat with which they are combined. By heat water becomes *steam*, and hence an agent is obtained of great and important use in domestic economy, navigation, and the arts. In short it is by heat that all animated nature is enabled to exist; for abstract a certain portion of heat from the living body, and death will be the result. See STEAM and THERMOMETER.

Nothing is known of the nature or cause of heat. It has been by some considered as a peculiar fluid, to which the term *caloric* has been applied; and many phenomena are in favour of the existence of such a fluid; by others it has been referred to a vibratory motion of the particles of matter. The former appears not only the most plausible, but the most probable hypothesis.

HEATH, *LING*, or *Erica*, a genus of shrubs consisting of one hundred and thirty-seven species, chiefly of the Cape and South of Europe, and four to

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the heaths or moors of our own country. Heaths have been divided into twelve sections : some of which consist of anthers awned, and leaves opposite, in threes, fours, six in a whirl, eight in a whirl, and scattered ; or anthers bearded with leaves opposite, in three or four in a whirl ; or anthers, simple, leaves alternate or opposite ; or in threes ; or anthers beardless, with leaves four or more.

The two last sections are the most numerous. The common heaths, the *vulgaris* and *vagaro*, are used for a variety of purposes in this country : such as for brooms and brushes ; and in Scotland they are used for thatching cottages, for draining land, the construction of walls for out-houses, and, when plastered over with mortar, of decent cottages. The sugar and aroma of the flowers are very enticing to bees ; but honey collected in the neighbourhood of heathy downs is of a dark colour, and by no means of a delicate flavour.

A great variety of exotics of this genus are found in our green-houses, and contribute largely to their beauty. The *elegans* is one of the finest of this kind. Heaths for the most part require a dry, sandy, or peaty soil. They are rarely, if ever, seen growing in moist clayey land.

HEATH, the **BERRY-BEARING**, **CROW-BERRY**, **CRAKE-BERRY**, or *Empetrum*, a genus consisting of two species : the *album*, a native of Portugal, and the *nigrum*, found on our own heaths. The black berries of the last are eaten by the Highlanders, but are not a very wholesome food ; if boiled with alum they afford a purplish sediment.

HECTIC FEVER, a fever accompanied, generally, with more or less prostration of strength, and wasting of the body. It is distinguished by an increase of the complaint about noon, but chiefly in the evening, with slight remissions in the morning, after profuse perspirations of the night ; the urine deposits a branny brick-like sedi-

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ment ; the appetite sometimes good thirst moderate.

Hectic fever is generally symptomatic of some other disease, as pulmonary consumption, a collection of matter formed in any part of the body, chlorosis, scrofula, diseased liver, and other viscera, &c. It is always attended with more or less danger, and requires the utmost care and attention in its cure ; the domestic prescriber should, therefore, not trust to his own judgment, nor, indeed, to the directions which he may find in books.

Hectics arising in consequence of a favourable suppuration of a wound or ulcer are least dangerous ; but where they have continued some time, there is less hope of their being ultimately subdued. See **PULMONARY CONSUMPTION**, and **LIVER**.

Hedge. See **FENCE**.

HEDGE-HOG, or *Erinaceus*, in zoology, a genus of animals comprising six species as follow : the *Europæus*, or Common hedge-hog, is about ten inches long ; the back covered with pointed spines ; when frightened or angry rolls itself up, and presents its spines on every side ; wanders by night ; feeds on toads, worms, beetles, fruits, &c. ; screams if the feet be pressed. It is occasionally kept in gardens, where it is of use by devouring mice, snails, &c. Flesh not eatable. It does not suck cows, as erroneously supposed to do. Brings from three to five young ; inhabits all Europe except the north, the southern parts of Siberia, and Madagascar.

The *inauris*, or Earless hedge-hog, inhabits South America. The *malaccensis*, or Malacca hedge-hog, from which is procured the precious bezoard called piedra del porca, inhabits Malacca. The *aureatus*, or Siberian hedge-hog, inhabits Siberia, and resembles the common hedge-hog. The *Setosus*, or Asiatic hedge-hog, inhabits India, and Madagascar. The *excundata*, or Madagascar hedge-hog, is tailless and inhabits the same countries as the last.

HEDGE-HYSSOP, or *Gratiola*,

HELLEBORE

A genus consisting of fifteen species, chiefly Indian and American, but a few European plants. The only species worthy of notice is the *officinalis*, a native of the south of Europe. It is cathartic and diuretic, and in large doses emetic. It has been recommended by the German physicians in dropsy; it has also been used in jaundice and worms. The herb should be gathered when it is in flower. The dose of the powdered herb is from fifteen grains to half a drachm; and of an infusion made with two drachms of the dried herb, and half a pint of warm water, from half a fluidounce to an ounce may be taken three times a day.

Hedge Sparrow. See WARRLER.

HEEL, in anatomy, the part of the foot which protuberates behind. The important tendon at the heel, which gives to and commands so much motion of the foot, is called the *tendo achilles*. When this tendon is ruptured, which sometimes happens, the knee should be kept constantly bent to relax the muscles of the leg; and the foot should be stretched out, to admit of the ends of the ruptured tendon being brought into contact. A roller should be applied with a firmness quite sufficient for securing the muscles and tendons in this situation; but care must be taken to prevent it from impeding the circulation: fine soft flannel, for this purpose, is preferable to linen or cotton.

HELLEBORE, or *Helleborus*, a genus of plants comprising eight species, chiefly common to the Levant and south of Europe, but two natives of our own country. The *viridis*, with stem many-flowered and leafy; the *fœtidus*, or Bear's foot, (See BEAR'S FOOT,) both natives of this country; and the *niger*, a native of Austria, are the chief.

The *Niger*, or Black hellebore, flowers from December till March, whence it has been called Christmas rose, and has obtained a place in our gardens. The leaves are a deep green, and the roots perennial; and are used as a drastic cathartic; and are, therefore, emagogue and hydragogue. It is sel-

dom given in substance, but in the forms of tincture, extract, or decoction. The *Tincture* is made with two ounces of the sliced root, and one pint of proof spirit, macerating for fourteen days, and then filtering it. The *Decoction* is made with two drachms of the root to a pint of water.

The dose of the root, in powder, is from ten grains to one scruple, which purges strongly. Of the *decoction* one fluidounce may be given every four hours. Of the *tincture* from thirty drops to one fluidrachm. Of the extract from three grains to a scruple.

It should be impressed upon the reader, that when black hellebore is taken in too large a quantity, it occasions vomiting, inflammation of the stomach, and death.

HELLEBORE, THE WHITE, or *Veratrum album*, one of the three species of the genus *VERATRUM*: the *luteum*, or yellow-flowered veratrum, and the *viride*, or green-flowered veratrum, are natives of North America.

The *Album*, or White hellebore, is a native of Greece, with perennial roots, stems three or four feet high; the flowers, which appear in July, are greenish white. The effects of the root of this plant, when taken internally, are extremely violent and poisonous; they operating both as an emetic and cathartic, producing bloody stools, great anxiety, tremors, and convulsions. Notwithstanding these effects, however, it has been successfully administered in cases of mania, epilepsy, leprosy; and in gout when combined with opium. The most ordinary use of this root is, however, as a local stimulant, as an addition to errhine powders; or in the form of decoctions as a lotion; or mixed with lard as an ointment for the itch, and hepatic eruptions; in every form, however, it requires to be used with caution. It may be taken as a snuff, the quantity of from three to five grains being mixed with twelve times its weight of starch, a pinch of which may be taken for several successive evenings, in lethargic complaints, and gutta serena. For internal administration, the

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dose ought not to exceed two grains. See **ITCH**.

HELMINTHOLOGY, the doctrine or natural study of worms. See **WORMS**.

HEMLOCK, or *Conium*, a genus of plants consisting of four species; three natives of the Cape; one, the *maculatum*, common to the banks and hedges of our own country. The following are the chief:

The *Africanum*, an herbaceous Cape plant, about nine inches in height, with umbels of white flowers.

The *Miculatum*, called frequently in medical books *cicuta*, or Common hemlock, is a biennial plant, with a branched, shining, spotted stem, which rises from a long taper parsnip-like root, to the height of six feet, the stalks terminated by umbels of white flowers. This plant is distinguished from other umbelliferous plants, with which it may be confounded, by its large and spotted stem, the dark and shining colour of its lower leaves, and their disagreeable and peculiar smell, when fresh and bruised.

The leaves and the inspissated juice or extract of hemlock, are powerfully narcotic, and, taken in large doses, poisonous. They have been advantageously employed as a palliative in both scirrhus and open cancer, abating the pain, and allaying the morbid irritability of the system. They have also been found serviceable in chronic rheumatism, in scrofulous, syphilitic, and other ill-conditioned ulcers, and glandular tumours; in hooping-cough, and the cough which often remains after inflammations of the lungs, &c.

The powder of the dried leaves, if well preserved, is the best form of this remedy: the leaves should be gathered about the end of June, when the plant is in flower, the small leaflets picked off (the footstalks being thrown away) and carefully dried. The dose of the powder is three grains, and gradually increasing it every day till a slight giddiness forbids its further increase.

The dose of the expressed juice, or extract, is three grains, gradually in-

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creased to one scruple, given twice or thrice a day. See **CANCER**.

For the mode of treatment, when hemlock has been taken improperly, whether as an over dose, or as a poison, see **POISONS**.

Although we have given the above account of hemlock, the domestic prescriber will scarcely, nor perhaps should he, venture to adopt its use, without the advice of some experienced medical attendant.

Hemlock, the lesser. See **FOOL'S PARSLEY**.

HEMLOCK, the **WATER**, or *Phelandrium*, a genus of plants consisting of two species, one of which, the *aquaticum*, or **HORSE-BANE**, is common to our own ditches, and is poisonous when eaten by horses. But whether from its own juice, or the secretion of an insect, the *curculio paraplecticus*, which feeds upon it, and breeds within its stalk, is not decided. The usual antidote is the dung of pigs, which should be given to the animal as soon as possible after the accident.

Another plant of the same name, but of a different genus, the *cicuta virosa*, is found wild in our ditches; it is extremely poisonous; and at times eaten by mistake for wild smallage.

HEMP, or *Cannabis*, in botany, a genus consisting of one species only, the *sativa*, a native of the East Indies, but cultivated in this country for its bark and seed. It is an annual plant, has a rank, narcotic smell, and the effluvia from the fresh herb, are said to affect the eyes and head; the water also in which it has been long steeped is commonly accounted poisonous. Hemp-seeds, when fresh, afford a considerable quantity of oil. Decoctions and emulsions of them have been recommended for coughs, ardor urinar, &c.

The soils most suited to the culture of this plant are, those of the deep, black, putrid vegetable kind, which are low, and rather inclined to moisture; and those of a deep, mellow, loamy, or sandy description.

To render the land proper for the reception of the crop, it should be re-

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duced to a fine state of mould, and cleared from weeds by repeated ploughings. In many instances it will require being dressed with well-rotten manure. The quantity of seed sown per acre is from two to three bushels; but as the crops are greatly injured by standing too closely together, two bushels, or, at most, two bushels and a half, will be generally found sufficient. In the choice of seed, care should be taken that it is new, and of a good quality; which is known by its feeling heavy in the hand, and being of a bright and shining colour.

The best season for sowing it in the southern districts is, as soon as possible after the frosts are over in April; and in the more northern districts, towards the close of the same month, or beginning of May. The most general method of sowing it is broadcast, and afterwards covering it by slight harrowing; but when the crops are for seed, drilling it in rows, at small distances, may be advantageous.

This sort of crop is frequently cultivated on the same piece of ground, for a great number of years, without any other kind intervening; but in such cases, manure is required in pretty large proportions. It may be also sown after most sorts of grain.

When hemp is sown broadcast it, in general, requires no after culture, but when it is drilled, a hoeing or two will be found advantageous.

In the culture of this plant, it is particularly necessary that the same piece of land should contain both *male* and *female*, or what is sometimes called *frimble* hemp: the latter contains the seed.

When the crop is ripe, which is known by its becoming of a whitish-yellow colour, and a few of the leaves beginning to drop from the stems, which happens, generally, in about thirteen or fourteen weeks from the period of its being sown, it must be pulled up by the roots, in small parcels at a time, by the head, taking care to shake off the mould well from them, before the handfuls are laid down. In some districts, the whole crop is pulled toge-

ther while in others, which is the best practice, the crop is pulled at different times, according to its ripeness. When, however, it is intended for seed, it should be suffered to stand till it is perfectly ripe. After the hemp is pulled, it is tied up in small parcels; and, if for seed, the bundles should be set up in the same manner as corn, till the seed becomes dry and firm: it is then either threshed on cloths in the field, or taken home to the barn.

The after management of hemp varies greatly in different places; some only *dew ripen*, or *ret* it, whilst others *water-ret* it. The last process is the best, and most expeditious: for by such process, the *grassing* is not only shortened, but the more expensive ones of breaking, scratching, and bleaching the yarn, are rendered less violent and troublesome. See *FLAX*.

After having undergone these different operations, it is ready for the purposes of the manufacturer.

The produce of hemp-crops is extremely variable. The average is, generally, about five hundred weight per acre.

Hemp, from growing to a great height, and being very shady in the leaf, leaves land in a very clean condition: hence it is sometimes sown for the purpose of destroying weeds; and is an excellent preparation for wheat crops.

Hemp has been cultivated in Bengal from time immemorial, principally for the preparation of an intoxicating spirit called *bang*; the leaves, it is said, are there used like opium, and possess similar intoxicating properties.

The uses of hemp are extremely various and important: for cordage, cables, cloth, &c. The seeds are eaten by various birds, but the constant use of them is said to render them prematurely old, blind, and consumptive. English hemp is esteemed the best.

Various vegetables have been occasionally employed as a succedaneum for hemp, amongst which the *solidago canadensis*, or Canada golden-rod, the *Helianthus annuus*, or Sun-flower, the

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crotolaria juncea, or Chinese hemp, and the common nettle, may be mentioned.

HEN, the female of the cock, (*phasianus, gallus*) a well-known domestic bird, which lays eggs, and produces one, two, or more broods of chickens in one year.

The most usual kinds of hens employed for the purpose of hatching eggs and rearing chickens, are the following:—Dunghill—Game—Darking—Poland—Bantam—Chittagong or Malay—Spanish, and their endless varieties.

The common *Dunghill fowl* needs no description;—it is of middling size, every variety of colour, and found in every part of the country. *Game fowls* are also well known. Their flesh is superior to that of all other breeds of domestic fowls; but it is extremely difficult to rear the chickens, from their natural disposition for fighting. The eggs are smaller than common, and extremely delicate. The *Darking fowl*, so called from a town of that name in Surrey, is one of the largest of our fowls, well shaped, and a plentiful layer: it is chiefly distinguished by having five claws on each foot. The *Poland fowl* is, in quality, similar to the Darking: they are called everlasting layers; a variety of this sort now imported from Holland, called *every-day hens*. The eggs of these everlasting layers are, however, neither so large, nor in other respects so good, as those of common hens. The *Bantam* is small and well known. See BANTAM. The *Chittagong or Malay*, is probably the largest of the gallinaceous tribe. Their flesh is dark and coarse, but they are good layers, and being well fed, lay large and good eggs. The *Spanish*, is very large, plumage black; flesh white and delicate: a large variety, being a cross between this and the Darking breed, has been introduced some time since, which is very valuable. From this enumeration, a choice of breeding hens may easily be made.

It should be a general rule to breed from young fowls; that is, the cock should be two years old; and the hens

in their second year; but, however, there will occur many exceptions to this: we have often found old hens the best, and most steady, for rearing a brood of chickens; and they are, certainly, the best for rearing guinea-fowls and ducks. The number of hens to one cock should be from four to six, not more. The spring is the best season to begin the breeding of poultry; but as it is always difficult to rear chickens before the latter end of March, unless under very favourable circumstances, the hen should not be suffered to hatch her first brood before that time. The better hens are fed, the earlier, and the more eggs, they will lay.

Eggs for setting should not be more than a month old, but newer than these are always to be preferred. The number of eggs may be according to the size of the hen—from nine to fifteen. The usual time of the sitting of hens is, for their own species, twenty-one days; but for ducks and guinea-hens they will sit till they also are hatched, generally eight or nine days longer.

The chickens *first hatched* should be taken from the hen, lest she should be tempted to leave the remainder of the eggs unhatched; they may be secured in a basket of wool, or soft hay, kept in a moderate heat, or near the fire; they will require no food for many hours. The whole brood being hatched, the hen is to be placed under a coop upon a dry spot, and apart from other chickens and young fowls. The *first food* may be split, or whole grits, afterwards tail wheat; all watery food, soaked bread, and potatoes, are improper.

There will be, in general, no necessity for confining the hen to the coop more than three or four days. The sooner afterwards she can go about with them, if the weather be dry and fine, the better: but when they get out in wet weather very young, they soon die from mere cold.

In conclusion, on the subject of hatching chickens, we would observe that, the best broods are those which are hatched when the hen *steals* her nest, that is, lays her eggs in an unknown

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place, and brings the chickens out in her own time, and in her own way.

In order to have a supply of fresh eggs throughout the year, it is necessary to keep five or six hens for such purpose. Two or three of the *first* brood, which are hatched in March or April, must also be preserved; in the autumn, such pullets will begin to lay, and at the only period when the hens, generally, do not: viz. through the months of October, November, and December.

In regard to fattening fowls for the table, we may add, that if they are well fed, there is no necessity whatever for dieting them previously to their being killed. The best and the most wholesome fowls, are those which are killed immediately from the barn-door of the farm-yard. See PHEASANT.

Hen, the Guinea. See GUINEA-HEN.

HENBANE, or *Hyoascyamus*, a genus of plants comprising eight species, chiefly natives of the Levant, and Palestine: one common to our own country.

Common Henbane, or *Hyoascyamus niger*, is an indigenous annual, frequent on dry waste grounds, and the sides of roads, with straw-colour flowers, pencilled with a net-work of purple. The stem is erect, woody, round, and branched; the leaves are alternate, sessile, and embracing the stem, large, the lower ones above a foot in length; they are of a sea-green colour. The whole of the plant is covered with soft, white hairs, feels clammy, and slightly adhesive, and is poisonous when eaten. The odour of the recent stalks and leaves is fetid.

Henbane is narcotic. Its operation is very similar to that of opium. It may be employed in all the cases where opium is indicated, where the latter disagrees with the habit, or where its constipating effect is wished to be avoided: in spasmodic affections, hysteria, rheumatism and gout. It has also been of great use when combined with colocynth, or other powerful cathartics, in Devonshire colic. Fomentations, or cataplasms of the leaves, are also used externally to allay the irritation of scro-

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fulous and cancerous ulcers, the piles, and other painful swellings; but applied even thus, it sometimes is said to produce alarming effects. The smoke of its seeds applied by a funnel to a carious tooth, is recommended in the tooth-ach.

It is given, generally, in the form of extract or tincture. The *extract* is made by bruising the fresh leaves, sprinkling on them a little water, then pressing out the juice, and, without separating the sediment, evaporating it to a proper consistence. The dose is from three grains to one scruple in the form of pills. The *Tincture* is made with two ounces of the dried leaves, and one pint of proof spirit; to be macerated for fourteen days, and then filtered. A dose of one fluidrachm of this tincture seldom fails of procuring sleep and quiet; it does not affect the head, or produce costiveness. In cases of diarrhoea, when this tincture is given, it will be necessary to add a few drops of tincture of opium, to counteract the tendency it has to run off by the bowels.

For the treatment of persons who have taken henbane, either by design or accident, in quantity sufficient to be poisonous, see POISONS.

Hen Harrier. See FALCON.

Hepatic Aloes. See ALOE.

HERB, a name given to all plants, the stalks or stems of which perish every year, after their seeds have attained maturity.

Herbaceous plants are such as perish annually, or at least whose stalks perish down to the roots.

Herb Christophen. See BANE-BERRIES.

HERB PARIS, **TRUE LOVE**, or *Paris*, a plant consisting of one species only, the *quadrifolia*, indigenous to our woods. The leaves and berries are said to be efficacious in the cure of whooping cough, and to act like opium. Great caution is, however, requisite in using them, as an over-dose may produce convulsions and death. The root is emetic.

HERB ROBERT, or *Geranium robertianum*, is an indigenous annual, growing on walls, hedges, and stony

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places; flowering from May to October. It is used by farmers for the staling of blood, and the bloody flux of cattle: but we cannot speak of its efficacy. It yields a yellow dye.

Herb Twopence. See LOOSE STRIFE.

HERBAL, a book containing the names and description of plants. It is also applied to a hortus siccus, or dry garden; an appellation given to a collection of specimens of plants, carefully dried and preserved, most commonly on, or between the folds of a book.

Various methods have been devised for drying and preserving specimens of plants. The following is perhaps as useful as any, certainly the most simple. Flatten the plant by passing a common smoothing-iron over the papers between which it is placed: and afterwards it should be dried slowly on a sand-heat. For this purpose the cold sand ought to be spread evenly, the smoothened plant laid gently on it, and the sand sifted over, so as to form a thick bed; the fire is then to be kindled, and the whole process carefully watched till the plant is gradually and perfectly dried. Thus the colour of the tenderest herb may be preserved, and the most delicate flowers retain all their pristine beauty.

HEREDITAMENT, whatever moveable thing a person may have to himself and heirs by way of inheritance, and which, if not otherwise bequeathed, descends to him who is next heir, and not to the executors as chattels do.

Hereditary diseases. See PREDISPOSITION.

HERIOT, in leasehold tenures, is a certain tribute or payment to the lord upon the death of the tenant. A heriot is sometimes the best live beast of which the tenant dies possessed; and sometimes the best inanimate goods, under which a jewel or a piece of plate may be included. Some heriots are due by custom, some by tenure, and by reservation, or deeds executed within time of memory: those due by custom are the most frequent.

HERMAPHRODITE, any *lusus*

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natura, wherein the parts of generation appear to be a mixture of both sexes.

In natural history, the term is more accurately applied to a variety of the lower animals, as insects and worms, as well as to most classes of vegetables: snails are hermaphrodites, possessing the organs of both sexes; but, notwithstanding, they cannot propagate without the male organs of the one being applied to the female organs of the other, and *vice versâ*.

HERMODACTYL, the root of a species of *colchicum*, not yet ascertained, but supposed to be the *colchicum illyricum* of Linnæus. It is imported from Turkey, and occasionally heard of in the shops; but does not seem to be of any importance.

Hernia. See RUPTURE.

Heron. See CRANE.

HERPES, TETTERS, or *Serpigo*, a genus of diseases, distinguished by an assemblage of little creeping ulcers, itching very much, and not inclined to heal, but terminating in branny scales. See RING-WORM, SCALD-HEAD, and TETTERS.

HIERRING, or *Clupea*, a genus of fishes, comprising fifteen species, scattered through the different seas of the globe, but chiefly found in the North. They are as follow:

The *Harengus*, or Common herring, too well known to need description. It inhabits the north seas, and migrates southerly, in immense shoals, towards the coast, for the purpose of spawning, and during its journey is followed by numerous predatory fishes, as well as birds. It feeds on sea insects and marine worms. In a commercial view, it is a fish of very great consequence, yielding not only immense quantities of food, but, in the northern seas, large quantities of oil. See the conclusion of this article.

The *Pilcardus*, or Pilchard, appears periodically in vast shoals on the Cornish coast about July; body thicker and rounder than the herring; it is also less; but is more full of oil. Pilchard oil forms a considerable article of trade.

HERRING

The *Sprattus*, or Sprat, inhabits the northern seas, and migrates like the herring; four or five inches long; flesh very good, but oily: the sprats caught in the Bristol Channel are superior to those brought to the London market.

The *Alosa*, or Shad, inhabits the Mediterranean, north European, American, and Asiatic seas; from one and a half to two feet long; ascends rivers in May and June, to spawn; feeds on worms and insects; the prey of larger fishes. Back dusky blue, or greenish yellow; scales large, deciduous. Flesh very good, particularly of the larger kind; frequently mistaken for salmon; but abounds with small bones, which, in the smaller fish, are very troublesome.

The *Encrasicolus*, or Anchovy. See ANCHOVY.

The *Atheriniodes*, inhabits Surinam.

The *Thrisa*, inhabits America, India, and China; about a foot long; flesh very savoury, often poisonous.

The *Cyprinoides*, inhabiting between the tropics; hardly a foot long;—the *setirostris*, the Pacific and Red-Seas;—the *mystus*, the Indian seas;—the *tropica*, Ascension island;—the *sinensis*, resembling the herring, but broader, found in the Chinese seas;—the *haumala*, about three feet long, inhabiting the Red Sea;—the *dorab*, the same sea; and the *villosa*, inhabiting the northern seas, make up the tribe.

Various methods have been adopted for curing herrings, but that by Mr. J. F. Denovan, an account of which is published in the 37th Volume of the Transactions of the Society of Arts, appears to be the best; we give the following summary of it.

The herrings are brought alongside the salting vessel, in the fishing boats, and placed under an awning in the vessel, to prevent their being tarnished by the sun or showers. They are then separated into four different sorts; *prime herrings*, *spent fish*, *shotten fish*, and *stragglers*, which three last denominations are packed together. The utmost care and attention is paid to the assorting. The fish are gutted with a knife,

having a long sharp point, about two inches in the blade, and four inches in the handle. Each gutter has on his right hand an oblong wooden trough, about four feet in length, covered thinly with fine Cadiz salt, into which he throws the herrings, previously assorted, as they are gutted. In gutting, the point of the knife is run through the neck, between the gill and the bone: the long small point perforates the bone; it is then drawn back, and by turning the fore-finger of the right hand round the head of the herring, and catching the point of the knife, the gills, stomach, and gut are pulled out betwixt the first and second fingers of the right hand. When each gutter has emptied his basket, by gutting the herrings and throwing them into the wooden trough, a quantity of fine Cadiz salt is thrown over them, and mixed with his hand to and fro, until it has taken due effect, and the herrings will not slide off the hand, or the wooden shovel with which they are also turned over. The packer then begins to pack. First, an equal quantity of Lisbon and Cadiz, with one-third of St. Ube's salt, pounded in a mortar, is strewed equally on the bottom of the barrel: the packer then lays a row of herrings down on their backs, with the head of one to the tail of the other, which he strews over with salt; the next row is laid across the first, and so on, strewing salt on each, until the barrel is filled, when the whole is pressed down with a piece of round wood; four pounds weight of salt are then strewed over the top, and the cask is headed up. In three days afterwards the barrel is opened, the superfluous pickle poured off and preserved, and the barrel filled up from another of the same morning curing. The casks are opened at the expiration of fifteen days, (ten days are sufficient,) and examined by the officer of the fishery, whose duty it is to see that the casks are properly filled up before branding.

When the herrings are properly assorted, cured in this manner, and pressed down, the fixed oil floats at the top

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of the barrel, and should be skimmed off, by which the fish are more effectually preserved.

The superfluous pickle will answer for curing mackerel.

It appears by the experiments of Mr. Denovan, that Lisbon and Cadiz salts are superior to Liverpool salt for curing herrings; and Mr. D. is of opinion that herrings, cured with the latter salt, can never have the flavour of Dutch herrings.

Our opinion of fish, as food, may be seen under the article ALIMENT: nevertheless, there is no doubt that herrings, as well as many other kinds of fish, form a variety which may be eaten occasionally without inconvenience. But salted herrings cannot be so wholesome as the fresh fish: those preserved with the least salt are of course the best: for this reason, the red herring is, we believe, more nutritious than that which is preserved in moisture.

Hessian Fly. See FLY, and SAW FLY.

Hiccorry Nut. See WALNUT.

HICCUGH, *Hiccup*, or *Sm-gultus*, a convulsive motion of the stomach and diaphragm, occasioned by various causes.

It can scarcely be considered as a disease, being merely a symptom. It sometimes arises from taking too large quantities of either food or drink; and sometimes it arises from want of food. If it proceed from wounds, profuse evacuations, in asthmas, or at the close of malignant fevers, and other debilitating diseases, it is always a dangerous, and often a deadly symptom.

Sneezing will sometimes remove it; or, sometimes, a strong compression of the arteries at the wrist; or drinking often of any liquid, provided it does not arise from repletion, in which case, if it be very troublesome, a gentle emetic or cathartic may be the best remedy.

In the Hiccough arising from depletion, the use of cordials and stimulants are indicated. Sometimes in children, or nervous persons, sudden mental agitation, whether of joy or pain, are equally efficacious in its cure. In per-

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sons who make hearty meals, this symptom is a certain indication that they have taken too much.

HIDE, the skin of any animal either raw or dressed. See TANNING.

HIDE-BOUND, a disease of horses in which the skin is unusually tight about the body, the coat at the same time appearing generally rough and dry. It is a symptom of various diseases. The best remedies are a light and nourishing diet, as pollard and oats made into a mash, or malt mash, carrots, lucerne, or vetches. If the dung smell offensive it will be proper to begin with a mild purgative: after the purgative, should there be want of appetite, tonic medicines, or the cordial ball, (See HORSE BALL) mixed with cascarilla bark. The water which the horse drinks should be at the summer temperature. These means, with good grooming, exercise, and moderately warm clothing, promise the most effectual cure.

HIGHWAY, a free passage for the king's subjects, on which account it is called the king's highway, though the freehold of the soil belong to the lord of the manor, or the owner of the land. Those ways which lead from one town to another, and such as are drift or cart-ways, and are for all travellers in great roads, or which communicate with them, are highways. A river, common to all men, is also considered as a highway. The reparation and care of highways are under the care of surveyors annually appointed throughout the kingdom.

The laws relative to highways and turnpikes, are very numerous and perplexing; they require great revision and amendment.

HIND, the female of the Stag. See DEER.

HINGES, iron or brass joints, whereby doors, shutters, &c. are united to other parts so as to open, shut, fold, &c. Hinges are of different denominations; as. But hinges, T hinges, H hinges, HL hinges, strap hinges, and dove-tail hinges. Besides these there are many others, distinguished by different names, according to their different forms and uses.

HIP

Hinny. See ASS.

Hip. See HYPOCHONDRIASIS.

Hip, in Anatomy. See THIGH.

HIP JOINT, the union of the head of the thigh-bone, or femur, in and with the acetabulum of the ileum or haunch-bone. This joint is sometimes luxated : in such cases, an able surgeon should be called in.

Hippocratic countenance. See FACIES HIPPOCRATICA.

HIPS, the fruit of the dog-rose, from which a conserve is made. See CONSERVE and ROSES.

HIPPOPOTAMUS, or RIVER-HORSE, in Zoology, a genus consisting of one species only, the *amphibius*, found in various parts of Africa : in the Nile, the Niger, the Gambia, and the Zaire, &c.

The Hippopotamus, in his full size, is nearly as large as an elephant. His head is large ; mouth very wide ; skin thick, dark, almost naked ; teeth very white, harder than ivory ; tusks from twenty to twenty-six inches long, weighing six or seven pounds ; grinders six above, eight below, on each side ; ears small, acute ; eyes and nostrils large ; lips tufted with hair ; tail naked, about a foot in length ; feet four, lobed ; legs short, thick lobes of the feet not connected ; flesh sometimes eaten ; fat occasionally used in pulmonary diseases.

The female produces one young, which she suckles in the water. The voice of the full grown animal is said, by some, to be similar to the neighing of a horse, whilst others represent it as a loud sonorous noise, between the bellowing of an ox and an elephant. Although an inhabitant of the water, he finds on land the chief part of his food, and on the banks of the Nile, he commits wide devastation, often defeating the hopes of the husbandman. In the South of Africa he commits similar ravages. Not only grass, but boughs, and roots of trees, are his ordinary food. He descends to the bottom of the deepest rivers, and walks along it with the same slow and stately pace as if on land ; but he is obliged

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to ascend at times, to inhale fresh air. He is seen at times in the sea, but it does not appear that he can remain long in that saline element : his food being solely of a vegetable nature. Unless when accidentally provoked or wounded, he is never offensive.

HISTORY, a narrative of the events and remarkable circumstances, which occur, or have occurred amongst mankind.

History is said to be philosophy, teaching by example ; and it is so provided that the books through which, in general, history must be studied, contain truth, and are written in the spirit of truth. We have said elsewhere in our work, that that knowledge which is acquired by experience is the best ; but as it is impossible that any individual can be present at the numerous and important transactions which take place in even his own immediate province, or country, during his life, he must derive a great part of his knowledge of modern history from books, or other printed or written documents, or oral testimony, the reception of which, as evidence, and upon which to draw conclusions, demands the utmost care and circumspection. If such care and circumspection be necessary in *modern* history, much greater are necessary in that commonly called *ancient*, where not only more or less distance of time has intervened, but frequently also a difference of manners, customs, language, &c. has rendered the verification of historical occurrences frequently difficult, and sometimes impossible.

With these cautions history may be studied with great advantage. In a moral point of view, both general and national history is extremely useful ; no person ought to be ignorant of it. By history we may learn how the great and the good have acted in the most difficult conjunctures ; by history we may trace the sinuous windings, or the wild career of vice, and the dignified, though calm, progress of virtue. By history we may learn, that though the

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oppressor be applauded by the venal, while he lords it over his fellow men ; that though the wanton destroyer of the human race may be hailed as a hero, by the obsequious or the mistaken crowd, yet, that when his meteorous course has vanished, his deserts will be duly scrutinized, and the wrongs of the innocent and the injured will be heard. By such and various other means, are lessons of wisdom conveyed by history to succeeding generations.

HISTORY OF NATURE, or NATURAL HISTORY, is a description of natural bodies, whether terrestrial, as animals, vegetables, fossils, fire, water, air, meteors, &c. or celestial, as stars, planets, comets, &c.

The study of natural history should form no inconsiderable part of the education of every well-informed individual. We have endeavoured, in the present work, to concentrate the most important information relative to this subject, particularly that which relates to Botany, Zoology, Mineralogy, &c.

Hive. See BEE.

HOARSENESS, a diminution of the sound of the voice, accompanied with an unnatural harshness, or roughness. Hoarseness is, in general, merely a symptom of other diseases ; it is frequently an attendant on a cold, or catarrh. See CATARRH. Hoarseness, also arises, sometimes, from a disease of the larynx, such as an ulcer, &c. in such case, the removal of the cause can only effectuate a cure. Hoarsenesses, which arise from some organic defect of the larynx or trachea, are most difficult of removal, and are generally beyond the reach of medicine. Lubricating medicines have been generally recommended in this complaint ; they may be tried, but their utility is very doubtful. The anisated balsam of sulphur has, sometimes, been of service. See BALSAM OF SULPHUR.

HOCK, or HOUGH, of a horse or other quadruped : the joint of the leg behind, corresponding with the knee in front. It is liable to injuries of various kinds, which are often severe and

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permanent, such as bone-spavins, blood-spavins, and curbs.

HOCK, a wine so named, from Hockheim, a town in Germany : old strong Rhenish wine.

HOE, an implement in husbandry, somewhat like a cooper's adze, but with a longer handle, used to cut up weeds in gardens or fields, and to gather the earth around plants, &c.

Hoes are of two kinds, the *hand-hoe*, which we have just described, and the *horse-hoe*, which is drawn by a horse, several kinds of which have been invented by Mr. COOK, Mr. AMOS, Mr. M'DOUGAL, and Mr. DUCKET. But the most useful instrument of this kind is said to be the *inverted hoe*, lately adopted in Norfolk, and so called from the shares being turned inwards, and placed something in the form of a cock's spur. This hoe may be worked with perfect safety, between rows of plants, while in their infancy, even as soon as they appear above ground, and it effectually cuts up all weeds between the rows. Inverted hoes are of two descriptions : one is adapted for clearing between the rows of plants, either at wide or narrow intervals, sown *upon the plat* ; the other at wide or narrow intervals, *upon the ridge*.

Horse-hoes are calculated not only for destroying weeds, but also for pulverizing the soil between the rows of plants set in straight lines, such as turnips, potatoes, or any sorts of grain which have been sown in drills at regular distances from each other. By these simple and effectual instruments a great deal of manual labour is saved. At the same time the hand-hoe is necessary for cutting up weeds, and loosening the earth between the plants, which the horse-hoe cannot reach.

Hog. See SWINE.

HOGSHEAD, in commerce, a measure of capacity for liquids. The hogshead of wine, or wine measure, contains 63 gallons, each of which contains 231 cubic inches ; the hogshead of beer 54 gallons of 282 cubic inches in each. In Scotland a hogshead contains 16 gallons.

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HOGSHEAD is a term applied also to very large casks of various dry goods. A hogshead of sugar contains an uncertain quantity; usually between ten and fifteen hundred weight of that article.

Hog's Lard. See **LARD**.

Holibut. See **FLAT FISH**.

HOLLY, **HOLM**, or *Ilex*, a genus of plants, consisting of nineteen species, chiefly natives of India and America; one of our own country. The following are the chief:

The *Aquefolium*, or Common holly, a well-known ever-green tree, or shrub, abounding in the hedges and woods of various parts of Great Britain: five varieties.

This tree is, in every part of it, extremely useful. The red berries are the food of birds; the tender branches that of sheep. The tenacious gluten, called bird-lime, is obtained in large quantity from its inner bark. See **BIRD-LIME**. The stem bears cropping for faggots; and the wood and branches, both living and dead, make excellent fencing. The wood, from the closeness of its grain, is often coloured for the handles of knives and forks, to resemble stained ivory.

The *Cassine*, is also an ever-green, native of Carolina; it has lanterns, clustered flowers, and red berries; the leaves are lanceolate, serrate: the serratures unarmed.

The *Vomitoria*, is a native of Florida;—the leaves have crenate serratures, which are unarmed.

The common holly is propagated by suckers or seed. The variegated holly by grafting on the common holly. The berries should be put into the ground for one year, after which they should be taken up and sown at Michaelmas: the young plants will appear in the succeeding year, which should be transplanted in the summer, being carefully watered.

Holly knee. See **BUTCHER'S BROOM**.

Holly Sea. See **ERYNGO**.

HOLLY HOCK, or *Alcea*, a genus of plants consisting of three species, all natives of warm countries, yet are hardy enough to thrive in the open air in Eng-

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land, and have been, for many years, some of the greatest ornaments in our gardens, towards the latter part of the summer. They are as follow:

The *Rosea*, or Common Holly hock, is a native of China. The flowers of both this and the *Ficifolia*, or Fig-leaved Holly hock, a native of Istria, are various: white, pale-red, deep-red, blackish-red, purple, yellow, and flesh-colour. The double flowers are varieties arising from culture. The leaves of the first sort are roundish, and cut at the extremity into angles; the second are deeply cut into six or seven segments, so as to resemble a hand.

The *Africana*, or African holly hock, is a native of the eastern shores of Africa, and has scarlet flowers.

Holly hocks are propagated by seeds, which should be carefully saved from those plants whose flowers are the most double. They should be sown on a bed of light earth, about the middle of April. When the plants have put out six or eight leaves, they may be transplanted; in October they may be placed where they are to remain. They generally blossom the second year; but in warm and favourable situations, against walls, they will sometimes blossom the first year; in such case they should not be transplanted.

Holm. See **HOLLY**.

Holm-oak. See **OAK**.

HOME, the place, or house, in which a person most usually resides. The word home is supposed to be peculiar to the English language. Certain, however it is, that all the kindly affections pervade, in general, the Englishman's home; and to which, as to a centre, he turns in every country, and in every climate. Most certain too, it is, that if happiness be not found at home, in domestic comfort, fire-side enjoyment, and the exercise of the domestic affections, very few mortals can find it in any other situation.

He, therefore, who deserts his home for happiness, will often find himself grievously disappointed. Exceptions, of course, there are; but the tranquil pleasures of home are not often out-

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weighed by those vivid and lively, but transient ones, which we occasionally meet with in mixing with the world. SOUTHEY well observes of *home*,

"There is a magic in that little word;
It is a mystic circle that surrounds,
Comforts and virtues never known beyond
The hallowed limit."

" *Hymn to the Penates.*

HOMICIDE, in law, is the killing of a man by a man. Of this there are several kinds; as, homicide by self-defence; homicide by misadventure; justifiable homicide, man-slaughter, chance-medley, and murder.

HONESTY, in a restricted sense, implies the quality of a man who is firm and constant in respecting the rights of others, and rendering to himself no more than that to which he is entitled, according to the strict rules of justice, or rather law. In this sense many misers are honest. But honesty, in its more extended and best signification, implies candour, probity, and integrity: honesty, in this sense, implies not only correct moral conduct, commonly so understood, but the absence of all injustice; a strict observance of the relative duties, and extensive benevolence. In the first sense, a person may be strictly honest in paying his debts, and in not taking more than his own; and yet, by a gross neglect of his relative duties, be exceedingly unjust. It should not be forgotten, that many of our best actions and duties are not enforced by the agency of positive laws: he, therefore, who merely lives without the breach of any positive law, may be called an honest man: so far, well; but to be virtuous, good, and honest, in the best acceptance of the term, he must do much more.

HONEY, or *Mel*, the saccharine substance collected by bees from the nectary of flowers, and deposited in the cells of the comb. See **BEE**.

Honey varies in flavour, according to the nature of the flowers from which it is collected, and the countries from which it is brought; thus, there is Minorca, Narbonne, and English honey;

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but sugar is, in all honey, the chief ingredient.

Honey, as a medicine, is of very little importance. It is esteemed laxative, and, externally, detergent and stimulant. It is sometimes used for mixing powders, &c. into the form of an electuary, but we do not conceive that it is at all superior to simple syrup. See **SYRUP**. It is occasionally employed in clysters; and is used in gargles for sore throat, and also in the ulcerations of the mouth and fauces, usually called *thrush*. It is also a useful detergent to foul ulcers. Honey is ordered by the colleges to be clarified, but we think the process is of no advantage whatever to its slight medical virtues.

Honey, in domestic economy, is used for the purpose of making the vinous liquor called *mead*. See **MEAD**.

As honey is very apt to ferment in the stomach, if eaten at any time as food, it should be in moderate quantity: large quantities occasion flatulence, colic, &c.

Honey is said to be sometimes adulterated with flour; we scarcely believe it. If, however, it should be so adulterated, by dissolving the honey in lukewarm water, the flour will be readily seen, as it will not dissolve.

A *poisonous honey* is found by the hunters in South Carolina, Georgia, and the Floridas, which, if eaten incautiously, produces pain in the stomach, convulsions, and death.

HONEY-DEW, or *Suffusio mel-lua*, a sweet substance found on the leaves of oak, hazle, hops, and other plants. This exudation is very injurious to the trees which are subject to it; no method of preventing it has hitherto been discovered.

HONEY-SUCKLE, **WOODBINE**, or *Lonicera*, a genus of plants, consisting of twenty species, chiefly common to Europe and America; three indigenous to the woods and hedges of our own country; they may be thus subdivided: stem-twining,—peduncles two-flowered;—stem-erect—peduncles many-flowered. The following are the chief:

HON

The *Sempervirens*, or Trumpet flowered ever-green honey-suckle, is anative of Mexico. The flowers are of a deep scarlet hue, very beautiful, but nearly inodorous. This species may be propagated by layers, cuttings, or seeds. The layers should be put down in autumn, and by the ensuing autumn they will have taken root, and may be cut from the parent plant, and removed to the place for which they are designed. The cuttings should be planted in September, as soon as the ground is moistened with rain. They should have four joints, of which three are to be buried in the ground. The seeds should be sown in autumn, soon after they are ripe. They thrive best in a sandy loam.

The *Caprifolium*, or Italian honey-suckle, has very fragrant flowers; found largely in Italy, and also in our own country. Propagated as the last.

The *Alpigena*, or upright red-berried honey-suckle, has a stem about four or five feet high; flowers red; a native of the Alps: propagated as the last.

The *Nigra*, or Black-berried upright honey-suckle; stem about three feet high; flowers white, succeeded by black berries. A native of the South of Europe.

The *Xylosteum*, or Fly honey-suckle, has a white flower, with a shrubby, branching, erect stem, seven or eight feet in height. A native of Europe, and found frequently in our own coppices.

The *Symphoricarpos*, or Shrubby St. Peter's wort, has small greenish flowers, a native of Virginia and Carolina.

The *Diervilla*, or Arcadian honey-suckle, a native of New York, has pale yellow flowers, which appear in May and June, and continue till the autumn, but rarely ripen in this country.

The *Periclymenum*, or Common climbing honey-suckle, and another variety with sinuate leaves, are common to our own hedges.

The *Tartarica*, or Tartarian honey-suckle, has white flowers; a native of Tartary.

The *Cerulea*, or Blue-berried honey-suckle, a native of Switzerland; has yellow flowers.

HOO

ney-suckle, a native of Switzerland; has yellow flowers.

The modes of propagation pointed out under the first species will, with little variation, apply to all the rest.

Honey-suckle, French. See FRENCH HONEY-SUCKLE.

HONOUR, a word, having as many shades of meaning as the word glory, and, like that, a word which is often applied to actions the very opposite of good. We fear that

"The word's a slave

Debaunched on many a tomb, on many a grave
A lying trophy."

SHAKESPEARE.

The duellist is generally, in the fashionable phraseology of the world, a *man of honour*. See CUSTOM, DUEL-LING, and GLORY.

HOOF, the hard horny substances on the feet of graminivorous animals. The hoof of a horse, to be perfect, should nearly circumscribe five-eighths of a circle, with a transverse line from one point of the heel to the other, as if a segment of three-eighths was taken away; in addition to which form, it should be solid in substance, smooth to the hand, and free from contracted rings or wrinkles, like those found on the horns of cattle, by which their age is ascertained. See FROG.

HOOF-BOUND, or CONTRACTED, is a very common defect in horses; various mechanical contrivances have been suggested for the prevention and cure of this complaint. As, however, it proceeds, most commonly, from hard and undue exercise, on rough roads, the best remedy is to turn the animal to grass. See SHOEING.

HOOF-CASTING, a complete separation of the horse's hoof. It may be produced by any cause exciting a general inflammation, and abscess in the foot. If the coffin-bone remain uninjured, a new hoof will commonly succeed; but the old one should never be taken away forcibly; and a soft easy leathern boot or shoe, should afterwards be applied, interlined with emollient ointment, and the dressing renewed daily.

HOOPING-COUGH, CHIN-

HOO

COUGH, or *Pertussis*, a convulsive cough, so called from a sort of hooping sound with which it is usually accompanied.

This complaint is seldom met with, except in infants and children, although all ages and constitutions are liable to its attacks. When once introduced into a family, few of its inmates escape, those only excepted, who have been already under its influence, as it occurs but once in the same individual.

In its first stage, it is generally accompanied with a slight fever, which subsides as soon as the hooping begins to form. It is sometimes so mild and manageable, as to require little or no medical treatment. This mild state of the disease comes on late in the spring, in the summer, or early in the autumn. In the winter it is usually more severe, and attended with danger.

In the commencement of the disease, gentle emetics of ipecacuanha and antimonial wine are useful, and should be given in the evening once a week, or oftener. The bowels should be kept open daily, by powders composed of jalap, calomel, and antimonial powders; interposed occasionally with a dose of castor-oil. All purgatives should be given in the morning, or as early as possible in the day, that their operation may be over before night, so as not to disturb the child's rest. In the course of the day or night, a table-spoonful of the following mixture, may be repeatedly given to a child of from two to three years old, when the cough is troublesome. Dissolve two scruples of sal soda in half a pint of soft water; to which add two drachms of ipecacuanha wine, and ten drops of laudanum, and sweeten the mixture with barley, or lump sugar. The dose for a younger child must be, of course, diminished; for an older, increased.

Change of air, when the season permits, will generally be found useful; pure air is necessary in all stages of the complaint.

When the fever runs high, and the violence of the cough is so great as to cause a blackness in the face and neck,

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with symptoms of suffocation, bleeding, either by the lancet, leeches, or cupping, will be necessary.

After the violence of the disease is abated by bleeding, and other evacuations, blisters and the following embrocation will be useful. Dissolve a drachm of camphor in an ounce of oil of turpentine, to which add two drachms of the spirit of hartshorn, and one drachm of the tincture of cantharides. A little of this is to be rubbed on the back or chest, till an eruption of moist pimples appears, when relief will generally be experienced. If such medicines should be not at hand, the juice of garlic, applied in the same way, will be found advantageous.

When the cough is very troublesome after the disease has continued for some time, a mixture of equal parts of antimonial wine, and white poppy syrup, given occasionally during the day, in doses of a tea-spoonful at a time, for a child of two years old, will often mitigate it.

In the beginning of the disease, the child should be confined to a light vegetable diet; after the fever and violent symptoms have subsided, a more nourishing diet may be allowed, with animal food; if great debility be present, beef-tea, &c. may be given. All flatulent and indigestible food must be carefully avoided; nor, whilst the cough continues, should the child be allowed to eat heavy meals of any kind.

It is scarcely necessary to add, that if the symptoms become alarming, a physician should be consulted.

HOPOE, **HOOP**, or *Upupa*, a genus of birds, consisting of ten species, scattered over the warmer climates of the globe. The following are the chief:

The *Epps*, or Common hoopoe. This species, often seen in our own country, is easily distinguished by its enormous tuft of feathers, which rises perpendicularly from the crown of the head, and which it can erect or depress at pleasure. The crest-feathers are all brown, tipped with black. The back, scapulars, and wings, are crossed with broad bars of white and black; beak

HOP

pale reddish brown ; breast and belly white. They are spread over the whole ancient continent, from Sweden, Lapland, and the Orcaades, to the Canaries, and the Cape of Good Hope. Throughout all Europe, they are birds of passage. They are seen among those vast crowds of migratory birds, which, twice a year, pass the island of Malta. Their food is insects ; their flesh smells strongly of musk ; they build in holes of rotten trees, or old walls ; and lay from two to seven eggs.

The *Paradisæa*, or Crested hoopoe, is about the size of a thrush, and weighs from two to four ounces. Two of the tail feathers very long, inhabits India ; length nineteen inches. So large a crest, added to a creature of so diminutive a size, renders this bird one of the most fantastical of the feathered tribe. The crest consists of two rows of feathers equidistant. The whole of these feathers are red, and terminate with a black spot. The upper part of the body is grey, with a tinge of brown, varied with transverse waves of dirty white ; the wings and tail are black, undulated with bars of white. Some varieties of this bird in Europe ; a distinct species in Madagascar and the Cape.

When tamed, this bird shews great attachment to its master, so as to efface the desire of liberty ; and, when fully domesticated, eats either bread or raw flesh. A variety of this species in Egypt, excellent food.

HOP, or *Humulus*, a plant consisting of one genus and one species, the *humulus lupulus*, found wild in the hedges of our own country, as well as in other parts of Europe.

The hop is an indigenous perennial, and flowers in July. It is very abundantly cultivated in Kent, Essex, Surrey, Suffolk, Worcestershire, &c. The strobiles are picked about the end of August or beginning of September, and sold to the brewers in large quantities, for imparting a bitter taste to malt liquors. As a medicine, hops are said to be narcotic, tonic, and diuretic ; and externally applied, anodyne and discutient. But their medicinal powers fur-

ther than as an agreeable bitter, as well as their power for preserving malt-liquors, in our deliberate opinion, require confirmation. See BREWING.

Hops are given in powder, infusion, tincture, or extract. The dose of the powder is from three grains to a scruple ; of the infusion (which is made with half an ounce of hops, and one pint of boiling-water) one fluidounce and a half, with half a fluidounce of cinnamon-water, twice or thrice a day.

The dose of the tincture (which is made with five ounces of hops and two pints of proof-spirit macerating for fourteen days) is from half a drachm to two drachms or more. The dose of the extract is from five grains to a scruple given in pills, or dissolved in water.

In the CULTIVATION of hops they are distinguished into several varieties ; as the *red-bind*, the *green-bind*, the *white-bind*, &c. And sometimes into the *Flemish*, the *Canterburys*, the *Goldings*, the *Farnhams*, &c. the first of these varieties affords a very small hop, but, from its hardy nature, can be cultivated in exposed situations, where the climate and cold are not adapted to the other sorts.

The soils most adapted to the hop plant, are those of the more deep, strong kinds, whether loamy, clayey, or sandy. They should be such as incline to dryness, without being too deficient in moisture, and that have a considerable depth of good rich vegetable mould. Arable land, if well manured, will answer for hops, but land fresh broken up from a state of pasture, old orchards, rich dry meadows, and other grass lands are, however, most proper.

The hop-plants are set in hills formed by digging holes in the spring, which are filled with fine mould, and the number of which varies from 800 or 1000, to 1200 per acre, i. e. from five to seven feet between every hill, according to circumstances. One, two, or three plants are planted in each hill ; but if hops are to be raised from cuttings, four or five of them, from three to four inches long, are planted

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and covered one inch deep with fine mould.

At the end of the first year, poles are put into the hills, round which the bines reared from plants are wound ; at the expiration of the second year, full-sized poles, from 15 to 20 feet long, are set in the proportion of two poles to each hill, and a similar number of hop-plants are fastened round each pole, by means of withered rushes.

The most proper time for collecting hops is, when the leaf rubs easily off the bine, when the hops have a strong scent, and the seed assumes a brownish colour. The drying of hops is usually performed on a kiln. They are afterwards packed in bags or pockets.

The culture of hops, though profitable, is very precarious. They are liable to be attacked by several insects and diseases, for which no adequate remedy has yet been discovered.

The hop, in its wild state, is eaten by cows, horses, goats, sheep, and swine. The young tops are eaten early in the spring, as a substitute for asparagus. Hops are subject to a duty of twopence per pound. Some estimation of the quantity of hops grown in this country may be made by the fact, that in the year 1818 (a good hop year) the duty paid for hops was upwards of 200,000*l*.

Hop-bines have been treated the same as flax, and made into cloth : paper has also been made with them.

HOPE, one of the best and most beneficent of the passions ; and also one of the last which, under ordinary circumstances, deserts the human mind. Indeed, hope seems almost to form a necessary part of our very existence, since scarcely an individual without some hope can be found. Hope appears to consist in that operation of the mind which gives encouragement to desire : the pleasing expectancy that its object shall be attained. Hope is so pleasing and so invigorating an affection, that it is emphatically styled, and with great reason, the *balm of life*. It preserves the mind from stagnating in its present possessions, cor-

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rects the uneasiness of desire, and animates it to struggle with the difficulties which it may have to encounter. In its general operation, the indulgence of hope is mixed with certain portions of doubt and solicitude ; but when doubt is removed, and the expectation becomes sanguine, hope rises to joy, and has been known to produce transports and ecstasies, equally with the full accomplishment of ardent desires. Hope, therefore, when not *inordinate*, supplies an excellent stimulus to moral and intellectual improvement, and yields, perhaps, the greatest portion of happiness which we can expect to enjoy in this world. But an indulgence in inordinate hope, which neither the peculiar situation of the individual, nor the nature of things warrants, is bad, and should not be encouraged. Inordinate and excessive hope may be, and sometimes unfortunately is, succeeded by a worse state of mind, despair. See DESPAIR. "*Hope humbly then.*"

Hope, in the cure of diseases, has a tendency to calm the troubled action of the vessels, to check and soothe the violent and irregular impetus of the nervous system, and is a beneficial stimulus to the oppressed and debilitated powers of nature. It is peculiarly advantageous in the diseases which proceed from fear, sorrow, and every species of anxiety, or which occasion a great prostration of strength, and dejection of spirits. Hope, therefore, demands a place amongst the medicaments which are the mildest in their operation, and exhilarating in their effects.

HOREHOUND, the WHITE, or *Marrubium*, a genus of plants consisting of fourteen species, chiefly natives of Spain and the Levant ; one of the Cape, and one of our own country. The species of most note is the *vulgaris*, a perennial plant growing in our wastes and dry banks, and flowering in July. The stems are about eighteen inches high, with white flowers, and crenate, wrinkled, hoary leaves. The green leaves have a moderately strong smell, their taste is very bitter, penetrating, and durable in the mouth. This plant does

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not appear to be possessed of any great or peculiar virtue. It is, nevertheless, used by the common people in coughs and asthmas. A sweetmeat, called *candied horehound*, is also found in the shops, but we cannot recommend it.

HOREHOUND, the **BLACK**, or *Ballota*, a genus of plants consisting of three species, one the *ballota nigra*, with white flowers, common to our own country. No cattle will touch this vegetable. It has been recommended in hysterical and hypochondriacal affections; but it is unknown in the present medical practice.

HOREHOUND, the **WATER**, or *Lycopus Europæus*, is an indigenous perennial plant, growing on sandy grounds and the banks of streams. It is said that the French dyers are chiefly indebted to this plant for the deep black colour of their cloth.

HORN, a substance so generally known as scarcely to need description; it grows on the heads of various animals. Horn consists principally of albumen.

Horn is converted to a great variety of useful purposes. Transformed into thin plates it is used for the more common kind of lanterns; when properly heated it becomes soft and flexible, so that it may be wrought into various forms, as in the making of handles for knives and forks, combs, &c.

To stain horn to imitate tortoise-shell. The horn to be dyed must be first pressed into proper plates, scales, or other flat form; then take of quick lime two parts, of litharge one part; temper them together to the consistence of a soft paste with soap lie. Put this paste over all parts of the horn except such as are proper to be left transparent, in order to give it a nearer resemblance of tortoise-shell. The horn must remain in this manner covered with paste till it is thoroughly dry; when, the paste being brushed off, the horn will be found partly opaque, and partly transparent, in the manner of tortoise-shell. Fancy and judgment are, of course, requisite in laying on the paste.

HORN-BEAN, or *Carpinus*, a genus

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of trees comprising four species, as follows:

The *Betulus*, Wych-hazel, or horse beech, a native of our own woods, with the scales of its cones flat, oblong, toothed; it bears a strong resemblance to the beech, and is in common use for stakes, fuel, and charcoal.

The *Ostrya* is a native of Italy:—the *Virginiana*, common to Virginia, having very long cones;—the *Duensis*, a native of Carolina.

HORN-BILL, or *Buceros*, a genus of birds consisting of sixteen species, with a horny protuberance on the upper mandible near the base. They are chiefly inhabitants of Asia and Africa. The principal are these:

The *Bicornis*, or Philippine horn-bill: two varieties. The first the size of a common hen; the second is said to be worshipped by the Indians, and has a voice resembling the grunting of swine. Inhabits the Philippine isles.

The *Abissinicus*, inhabiting Abyssinia, is three feet two inches long; bill nine inches.

The *Malabaricus*, or Pied horn-bill, inhabiting India, from two and a half to three feet long. Eats flesh, nuts, small birds: two other varieties.

The *Hydrocorax*, or Indian horn-bill, inhabiting Molucca, is two feet four inches long; frequently tamed to destroy rats and mice; feeds on the wild nutmeg, which renders its flesh peculiarly aromatic.

The *Rhinoceros*, or Rhinoceros horn-bill.

Horn fish. See **PIKE**.

HORN BLENDE, or *Horn blenda*, a mineral of a greenish black colour, found sometimes in prismatic crystals; it consists of silica and alumina, with magnesia, and appears to derive its colour from oxide of iron, of which it contains from 20 to 30 per cent. Granitic rocks frequently contain a large portion of horn blende. It is found in most European mountains in solid masses, interspersed with other stones. A species is also found in Labradore. See **SYENITE**.

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Hornet. See WASP.

HORROR, that very strong and painful emotion of the mind excited by the view, or the contemplation of something peculiarly atrocious and disgusting in the conduct of another; by enormities, profligacies, or cruelties; and by sufferings and punishments at which our nature recoils.

HORSE, or *Equus*, a valuable and important genus of quadrupeds, consisting of six species as follow:

The *Caballus*, or Horse, having solid hoofs; mane and tail with long flowing hair. Two varieties; the wild and the domestic horse.

The horse is cultivated with care in most parts of the earth; but is found in its natural state in the deserts of Great Tartary; sometimes in Africa; timid, swift, vigilant, moves in herds, having a leader before with its ears thrown forwards, and a centinel behind with his ears bent back to guard against surprise both ways. It varies much in size and colour; feeds on grain and herbage; generous, proud, spirited; drives away flies and insects with its tail; calls after its companions by neighing; scratches its shoulder with its teeth; rolls itself when hot; is without gall-bladder, but has large gall ducts to answer the purpose; does not vomit or eructate; changes its fore-teeth in the second, third, and fourth years; acquires tusks in the fifth; gravid two hundred and ninety days. Continues to bring forth till the age of sixteen or eighteen; lives till near thirty-years old; casts its hair once a year, generally in the spring; sometimes in autumn.

At the age of two years, or two years and a half, the horse is capable of propagating, and even at an earlier age the mare is capable of receiving him. But the foals of such young animals are generally weak and ill-formed. The horse should never be admitted to the mare till he is four, or four and a half, even in the case of draft horses; fine horses never before they are six; and Spanish stallions not before they are seven. The mare is generally in season from the beginning of April till the end of June;

but her chief ardour for the horse continues only about twenty days; and it is this critical period of which choice should be made. The stallion should be sound, well made, vigorous, tractable, a sensible mouth, and of a good breed. For fine saddle horses, Arabians, Turks, Barbs, and Andalusians, are preferable to all others; but of the horses in common and general use in Europe, none can come in competition with those of our own island. For draught horses the stallions should be at least fifteen hands high; for saddle horses from fourteen to fifteen. Nor should the colour be altogether disregarded: of whatever hue, whether black, grey, bay, or sorrel, it should be bright and perfect of its kind. The mare contributes less to the beauty of her offspring, but more to the constitution and stature. For elegant horses, Spanish and Italian mares are to be preferred; for draft horses those of Britain and Normandy. But if the stallion be good, the mare of any country will produce a fine horse, provided she be well made and of unexceptionable breed.

In foaling, the mare, in general, requires no attention but to be previously placed in such a situation that she cannot meet with any accident. A small paddock, with proper fences, is the best place. And if the mare has foaled early, that is, some time in March or April, the colt may be weaned in the course of the autumn, before a decay of pasture occasions a perceptible reduction of milk. It is, however, a great mistake, to suppose that mares can breed with advantage regularly every year. A better practice is, to let them have a colt every alternate year, by such means, the colts will be stronger, and the health of the mothers much less impaired. See AGE.

In Persia, Arabia, and most Eastern countries, except China, the horse is never gelt as in Europe. This operation greatly diminishes their courage and spirit, and, probably, their strength; but it makes them more tractable, gentle, and good-humoured. To take all advantage of their sex, the

HORSE

operation, instead of being performed as it is often done, at twelve or eighteen months of age, should be delayed till they are two years old, or somewhat more; the gelding will then retain some portion of the natural strength and courage of the stallion.

The English have ever been attentive to the rearing of good horses. No country can equal the strength and size of our draught-horses, the speed of our racers, or the union of strength and activity of our cavalry. In London, there are instances of horses which can draw on a plain, for a small distance, the weight of three tons; and which with ease can draw half that weight for a continuance. Some of our mill-horses will carry half a ton weight; indeed, we have heard of a horse that once carried a ton.

Domesticated horses, and particularly those kept in the stable, are liable to a variety of diseases. For the treatment of which, see the respective articles in the order of the alphabet. The catalogue of the diseases of horses would be considerably reduced, were they always kept in an open yard, or small paddock, having a shed in which they could voluntarily take shelter, provided, also, that they are not at the same time over worked.

The *food* of horses is deserving of considerable attention; we believe, that where they are *moderately* worked, the best, because the most natural, is grass, and in the winter hay; but where extraordinary exertions are necessary, or deemed necessary, by the sporting fancy, or the cupidity of man, more powerful and concentrated stimulants are, and indeed must, be used; hence the utility of corn, strong beer, &c. &c.

Docking, or the operation of cutting off a part of the tail, is a very short and simple operation, attended with no danger, and may, with yearlings, be performed with a common knife. The usual quantity taken off, is the width of a man's hand: if there be much discharge of blood, a very slight cauterization with a hot iron, and a little pow-

dered, rosin, immediately stops the bleeding; and a cure takes place in a few days.

The *Hemionus*, Jicta, or Wild mule, with solid hoofs, inhabits the deserts of China and Arabia, in grassy, saline plains, but avoids woods and mountains. Colour uniform, without cross on the back; tail hairy at the tip only; head large, narrowing towards the nose; neck slender, hair soft, face tawny; body above brownish, beneath, and towards the buttocks, white; along the back, a blackish list; tuft on the tail black; teeth thirty-four. Called by the Chinese, *yo-to-tse*; and by the Mongolians *Dshikketaei*.

The *Asinus*, or Ass, is well known; the male has a black cross on the shoulder. Four varieties: one with mane woolly, dusky; ears long; erect: constituting the wild ass; another the domestic ass; the third, a hybrid, produce of a male ass and a mare, the *mule*. See MULE. The fourth is also a hybrid, the produce of a horse and a female ass, called *hinny*. See Ass.

The *Zebra*, having solid hoofs, inhabits, in troops, the plains of Southern Africa; body pale buff, with perpendicular brown bands; the limbs with cross stripes; extremely beautiful and malignant; swift, wild: size of a mule.

The *Quagga*, inhabits South America, in separate tribes; hoofs solid; body above, chesnut, with perpendicular brown stripes; sides spotted; belly, legs, and thighs white; thicker, stouter, and more tameable than the zebra.

The *Bisulcus*, Chinese horse, or cloven-foot horse, inhabits the rocky mountains of the Cordilleras, in South America; wild, swift, vicious; neighs like a horse; resembles, in size and colour, the ass, but wants the shoulder-cross; ears small, erect.

HORSE-BALL, a medicine rolled into a cylindrical form, and given to horses. Under the article *ball* we have described the best form and mode of giving balls to horses; we add here that horse-balls are of various kinds, but chiefly those denominated *cordial*, *purging*, and *diuretic balls*. For

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PURGING BALLS, see **ALOES** ; or **DIURETIC BALLS**, see that article ; other balls are also described for particular diseases in different parts of our work. We shall here only treat of the **CORDIAL BALL**, which may indeed be as various as the judgment, or too often, we fear, the fancy, of the farrier may prescribe. A cordial ball, which has, however, been much, and for a long time used, is the following, commonly denominated *Bracken's* or *Markham's* balls. Take of diapente, flowers of sulphur, and turmeric root powdered, of each one ounce and a half ; of aniseeds in powder two ounces ; of saltpetre one ounce ; of Spanish liquorice one ounce, which dissolve in two ounces of warm water. Mix the whole into a ball, with about half a pound of honey ; adding half a drachm of oil of aniseed, one scruple of oil of caraway-seeds, and half an ounce of olive oil. From four to six, or even eight ounces, of this ball, may be given to horses and cattle, according to circumstances, for one dose.

The above, it must be admitted, is a singular composition, and that there is no difficulty in prescribing cordial balls of more simplicity and superior efficacy ; such is the following : Take of Cayenne pepper one ounce : (or in its stead, two ounces of grains of Paradise in powder) of aniseeds and caraway seeds, each in powder, one ounce ; let them be made into a ball with syrup for one dose. When such balls are wanted more immediately to restrain a looseness, opium should be added in doses according to circumstances.

Horse-bean. See **BEAN**.

Horse-beech. See **HORN-BEAN**.

Horse-chesnut. See **CHESNUT**.

HORSE-FLY, or *Hippobosca*, a genus of insects, consisting of five species, four of them common to our own country. The mouth is furnished with a short cylindrical two-valved sucker ; body flat and hard. The *equina*, or Horse-fly, inhabits Europe, and especially the New Forest ; is very troublesome to horses, hiding themselves under the hair, and attaching firmly to the skin by means of its crooked nails.

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Its general appearance is that of a large bug ; a fine net, or other covering, thrown over the horse, is the best preventive of the attacks of this insect. The *auricularia*, infests various birds, especially swallows ; so also does the *hirundinis*, the latter tribe of animals ; the *ovina* infests sheep. See **TICK**. The *uralensis* inhabits Ural.

HORSE-MEDICINES, a name given to those drugs prepared exclusively for the cure of the diseases of horses. See **ALOES**, **BLISTERS**, **CLYSTER**, **CATHARTICS**, **DIURETIC BALLS**, **DOSE**, **HORSE BALLS**, **DRENCHES**, **POULTICES**, &c.

Horse-mint. See **MINT**.

Horse-muscle. See **MUSCLE**.

HORSE-RACING, a game with which many of the grown gentlemen and ladies of this kingdom are very often pleased to be amused, at which much money is frequently lost and won, and where, sometimes, the poor animal, the subject of the sport, drops down dead, or becomes otherwise disabled. It cannot, surely, be necessary for us to say, that such game or sport is altogether beneath the dignity of intellectual beings ; and that its moral consequences are injurious to the best interests of mankind.

HORSE-RADISH, or *Cochlearia armoracia*, a species of scurvy-grass, well-known in our gardens. It is a perennial plant, growing wild in many parts of England, in moist grounds, and waste situations, and flowering in June ; but is generally cultivated for culinary and medicinal purposes.

It is one of the most easily cultivated of all garden plants, growing in almost any soil or situation ; and when once in a garden is not readily eradicated.

The *fresh* root of this plant is the only part which is used medicinally : and as its virtues depend principally upon a pungent essential oil, which is dissipated by drying the root, it should be preserved in sand, in a cool place. Both water and spirit of wine extract its active principles. It is stimulant, diaphoretic, and diuretic ; and, externally, rubefacient. It is used with ad-

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vantage in paralytic complaints, and chronic rheumatism, both externally and internally; and in dropsy, particularly when it follows intermittent fever. It has also been found efficacious in some cutaneous affections; a syrup, made with an infusion of it, removes hoarseness arising from relaxation.

It may be given in substance in doses of half a drachm or more; or in small pieces, swallowed whole. A *compound spirit of horse-radish*, is ordered by the London College, the dose of which is from one fluid drachm to four. But it is more commonly used in conjunction with other tonics, in various complaints attended with debility.

The *compound infusion of horse-radish* is made thus: Take of fresh horse-radish root sliced, mustard-seed bruised, of each an ounce, boiling water a pint. Macerate for two hours in a lightly-covered vessel, and strain; then add of compound spirit of horse-radish one fluidounce. It is particularly useful in palsies, and the dropsies occurring after intermittents. The dose is from one fluidounce to three, given three or four times a day.

If horse-radish be taken in excess, it sometimes produces vomiting; at others stranguary.

Horse, the river. See HIPPOPOTAMUS.

Horse, the sea. See PIPL-FISH.

Horse-shoe. See SHOES.

HORSE-SHOE-HEAD, an affection of the head of infants, in which the sutures of the skull are too open, or too great a space occurs between them, so that the aperture is not closed till the age of puberty. It is a sign of weakness, and, sometimes, short life. The usual practice in this case is, to rub the head occasionally, with warm rum or brandy, mixed with the white of an egg, or palm-oil. A small cushion may also be worn over the aperture. Great attention is necessary to the general health of children affected with the complaint: the diet should be of the most nourishing kind, avoiding all flatulent food, and the bowels, if constipated, should be kept properly relaxed. Such children are often affected with

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hydrocephalus. See DROPSY of the BRAIN.

HORSE-TAIL, or *Equisetum*, a genus of plants comprising eight species; six of them common to our own country, in woods, corn-fields, moist places, or the banks of stagnant waters. The *hyemale*, shave-grass, or Dutch rushes, contains in its leaves a considerable portion of starchy, or siliceous matter, and is hence employed by white-smiths, for polishing their metals. Most of the species contain something of the same property, and are employed by the dairy-maids of the north, for scouring their milk-pails.

There is also another genus of plants, *hippuris*, consisting of two species, called horse-tail, one of which, the *vulgaris*, was formerly used in medicine as an astringent, but of no importance. It is found in our ditches.

HORSEMANSHIP, the art of riding with grace, safety, and fearlessness, on horseback.

The horse should be mounted always from the left side, and the left foot placed first in the stirrup. When mounted, the body should be kept easy but erect, inclining rather backwards than forwards; the weight chiefly resting upon the posteriors, with a moderate pressure of both legs upon the sides of the horse. To preserve which position free from constraint and stiffness, the proper length of the stirrups is material to be attended to; for unless they are of length adapted to the stature, it will be impracticable for the rider to keep a firm and graceful seat, particularly with violent, vicious, or restive horses. The general error amongst inexperienced horsemen is, that of having their stirrups ridiculously short, by which they strangely conceive that they insure their own safety, though the opposite is the fact. The stirrups should be exactly of that length in which the rider sitting upon his horse, either still or in action, may be able to discharge his foot from them by a single motion, or be able to catch, or recover them with equal facility.

In riding, the reins should not be

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held too tight. Gentleness, good-nature, and a thorough command of temper, are excellent qualifications for a rider, and while they will prevent a horse from acquiring ill-habits, produced by the indulgence of passion, and an unrestrained use of the whip or spur, they will go far to eradicate whatever mischief there may be in the horse's natural disposition.

And let it never be forgotten, that horses addicted to starting, do it not from obstinacy, but fear, and that pity and tenderness, instead of harshness, ought to be exercised towards them. But how often do we see force and severity used on such occasions, to compel this noble animal to overcome some natural repugnance !

Horticulture. See GARDENING.

HOSPITAL, a place, or building, erected out of charity, for the reception and support of the poor, aged, sick, and otherwise helpless.

Most of the counties and large towns in England have hospitals appropriated for the comfort or cure of the sick and infirm ; but in London and its neighbourhood, there are many institutions under this name, intended either for the instruction of youth, the comfort and restoration of the sick, or for the support of the aged. The principal of these are *Greenwich, Chelsea, Bethlem, St. Luke's, St. Bartholomew's, St. Thomas's, Guy's, Christ's, the Foundling, the Lock, London, the Lying-in, the Magdalen, the Small Pox, St. George's, the Middlesex, and Harbinder's* hospitals.

Some of these hospitals materially contribute to the improvement and diffusion of medical knowledge ; lectures being constantly given in many of them by some of the first professors : indeed, we presume, that such a practical school of medicine as London affords, is not to be equalled in the world.

Greenwich hospital is for sailors ; Chelsea for soldiers ; and Bethlem and St. Luke's for lunatics.

HOSPITALITY, the practice of entertaining strangers. Hospitality is unquestionably a virtue : we are sorry

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to observe that this trait of manners in the present age of refinement, or of affected refinement, has, from our towns at least, almost taken flight, without leaving, we fear, any equivalent to supply its place. Exceptions we shall no doubt find, thanks to the benevolent kindness of our nature. Would that a cold calculating selfishness were not too much the order of the day !—but we will hope better times.

HOT-BEDS, in gardening, are made either of fresh horse-dung, or tanners' bark.

Where horse-dung is employed, a trench must be dug proportionable to the frames for which it is intended ; if the ground be dry, it may be a foot and a half deep, and if wet, only six inches deep. The dung should be spread evenly and smoothly, and trodden down ; the bottom part of the heap, which is commonly free from litter, should be placed upon the surface of the bed. If it be designed for cucumbers to remain there, make a hole in the middle of the place designed for each plant, about ten inches over, and six inches deep, which should be filled with good fresh earth, thrusting in a stick to shew the place of the aperture ; then cover the bed all over with the earth taken out of the trench, about four inches thick ; put on the frames and glasses ; and when the earth is warm, which it commonly will be in three or four days after the bed is made, let the seeds be planted. For other plants no apertures in the dung need be made, but a covering of good earth, three or four inches thick, will be necessary. During the first week or ten days, the glasses should be slightly covered at night ; and in the day-time, they should be carefully raised to let out the steam. As the heat abates, the covering should be increased, and as the bed grows cold, new dung should be added round the sides of the bed.

Hot-beds with tanners' bark, particularly for tender exotics and fruits which require an even degree of warmth for several months, are preferable to dung. They are made thus : dig a trench

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about three feet deep, if the ground be dry ; but if wet, not more than one foot deep : it should be raised two feet above the ground. The length should be proportioned to the frames intended to cover the bed ; but it should be never less than ten or twelve feet, and the width six. The trench should be bricked up round the sides, to the height of three feet. It should be filled in the spring with fresh tanners' bark that has lately been drawn out of the vat, and has lain in a round heap for the moisture to drain out of it, only three or four days. As it is put in, it should be gently beaten down, equally, with a dung-fork ; but it must not be trodden. The frames and glasses may then be put on, and, in about ten days or a fortnight, it will begin to heat ; at which time plunge your pots of plants or seeds into it, taking care not to tread down the bark in so doing. Such a bed will continue for three or four months in a good state of heat ; and if the bark be stirred up pretty deep, mixing a load or two of fresh bark with the old when the heat declines, the heat may be preserved two or three months longer. The frames and glasses must be proportioned to the several plants which they are designed to contain.

HOT - HOUSE, in gardening, a building formed much upon the same plan, and for a similar purpose, as a green-house ; but with a hot-bed of tan in its centre, and warmed by a double stove, to a considerably greater extent of heat, which should be seldom less than 70° of Fahrenheit, and equally maintained. Here are reared such exotics as the usual heat of the green-house is incapable of bringing to perfection, and as these are commonly of less height than green-house plants, the hot-house itself is considerably less lofty.

Various methods have been devised for warming hot-houses and green-houses. *Steam* has lately been applied for such purposes, and promises the most success. See **STEAM**.

Hound. See **DOG**.

HOUND'S-TONGUE, or *cynoglossum*, a genus of plants consisting of

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twenty-four species, scattered over the globe, of which two are common to the wastes of our own country : the *officinale*, a narcotic, by some supposed poisonous ; and the *sylvaticum*. The *officinale* was formerly in the materia medica, but now expunged ; and the roots are said to drive away mice and rats, but the domestic cat is a much better preventive of the intrusions of these quadrupeds.

HOUR, a measure of time, consisting of the twenty-fourth part of the natural day, or that space of time which the earth takes to perform its diurnal revolution. The hour contains 60 minutes.

HOUR-GLASS, a popular kind of chronometer, or clepsydra, serving to measure time, by the descent or running of sand, water, &c. out of one glass vessel into another. The best, it is said, are such as, instead of sand, have egg-shells well dried in the oven, then beaten fine, and sifted.

HOUSE, a place built with conveniences to live in ; or, a building wherein to shelter a man's person, family, and goods, from the inclemencies of the weather, and the injuries and depredations of evil-disposed persons.

In addition to what we have said under the articles **BUILDING**, and **FOUNDATION**, we wish to observe here, that in building houses, care should be taken, if there be no cellar or kitchen under the ground-floor, that the ground-floor itself should be, at least, one foot or more above the land on which the house stands. For want of this precaution, many houses, particularly in the country, are always damp, and consequently unwholesome.

HOUSE-LEEK, or *Scmpervivum*, a genus of plants, consisting of seventeen species, natives of Europe, Madeira, or the Canaries, except one, which grows wild on old walls in our own country. The following are cultivated principally for ornament.

The *tectorem*, or Common houseleek, formerly used medicinally, but of no importance ; the *globiferum*, or Globular house-leek : the *arachnoideum*, or

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Cobweb house-leek ; the *montanum*, or Mountain house-leek ; the *arborescens*, or Tree house-leek ; and the *canariensis*, or Canary house-leek.

The herbaceous sorts may be increased by planting their offsets, which should be slipped with a few root-fibres appended, and planted in the spring on rubbish, rock-wort, &c. or in pots. The Canary species is propagated by seeds sown in the autumn, or early in the spring ; the tender green-house sorts may be raised from cuttings of the branches, or from seeds ; the first mode answers best.

House-leek, lesser. See SEDUM.

Hoven. See BLOWN.

HUMANITY, that benevolent feeling which is evinced in kindness and tenderness towards our fellow-creatures, and particularly that which is demonstrated when they are overwhelmed by either mental or bodily distress or pain. A sense of our individual weakness and imperfection ought to make every person humane.

HUMANITY TO ANIMALS ought to form a theme of constant inculcation in every seminary of education, and every well-ordered family. The untold miseries and pain which, by such means, may be prevented to these suffering creatures, are incalculable. We should hope, that it can scarcely be necessary to insist upon the cruelty and criminality of the wanton infliction of pain, even upon brutes, in this enlightened era : but, however, many facts are before us, which convince us of the utility of a warning voice.

"Ye therefore, who love mercy, teach your sons
To love it too."

COWPER.

HUMBLE BEE, or *Bombus*, a genus of insects, which has been differently arranged by different naturalists. Forty-eight species have been enumerated. We can only notice the *Major*, commonly called Bomble-fly, or Humble-bee, well known to most persons. It is black, with thick yellowish down ; inhabits Europe, and hovers about flowers, with a buzzing noise,

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extracting the nectar. Its sting is not so virulent as the honey bee. It makes holes, and resides occasionally in old mud-walls, in which it deposits farina, but no honey.

Humble plant. See SENSITIVE PLANT

HUMERUS, in anatomy, the bone of the arm, extending from the shoulder to the elbow.

HUMILITY, in ethics, a state of mind consisting in the moderate estimation which a person puts upon himself, and every thing relating to him. It is exemplified in the modesty of our appearance, of our pursuits, and of our behaviour towards other men. It is distinguished from affectation, bashfulness, and meanness, and it is also opposed to pride, arrogance, and conceit.

Humour, good. See DISPOSITION.

HUMMING-BIRD, or *Trochilus*, a genus of birds, consisting of sixty-five species, all American or West Indian birds except one, which inhabits the Cape of Good Hope. About half the species have a curved, and the other half a straight bill. This genus is the least of all the feathered tribe. They feed like insects on the nectar of flowers, particularly those with long tubes, which they extract like bees, while on the wing, fluttering about the place and making a humming noise ; the legs and bill are very weak ; the tail feathers are ten. Of all animated beings, the humming bird is, perhaps, the most elegant in its form, and brilliant in its colours. The emerald, ruby, and topaz, sparkle on its apparel, which is never soiled by dust, for in its aerial life it scarcely ever descends so low as to touch the earth. They rarely leave the tropical climates ; their nest is curiously constructed, and attached to two leaves, or a single twig of the citron, or orange. Eggs two, white ; small, about the size of a pea ; time of incubation twelve days. They cannot be tamed ; some have been kept alive a few weeks by syrups. They are neither shy nor suspicious ; the Indians catch them by limed-twigs ; when taken they instantly expire ; they are

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afterwards worn as ear-rings by the Indian ladies. The following are the chief:

The *Moschitus*, or Ruby-necked humming bird: colour green-gold; supposed the most beautiful of the tribe; inhabits Guiana, Brasil, and Surinam; rather more than three inches long.

The *Superciliosus*, or Supercilious humming bird, inhabits Cayenne, one of the largest of the genus; nearly six inches long.

The *Minimus*, or Least humming-bird, is green, smaller than several of our bees; hardly a quarter of an inch long. There are several species which do not weigh more than fifty grains, but the general weight of them is from twenty to forty-five grains. Found in Brasil.

HUNDRED, the number of ten multiplied by ten. Many articles in commerce are sold by the hundred; deal-boards are sold at six score to the hundred, called the long hundred. Pales and laths are counted at five score to the hundred, if five feet long; if shorter, the hundred is proportionately more in number. See **LATHS**.

Hungary-water. See **ROSEMARY**.

HUNGER, an uneasy sensation in the stomach, occasioned by long abstinence from food when the body is in a state of health.

The phenomena of digestion all accord with the conclusion, that a state of painful contraction in the stomach, analogous to that of fatigue in the limbs, occasions the sense of hunger. The returns of hunger are, however, quicker or slower in different individuals. Where the mobility is greater, and the tone and vigour of fibre less, as in females and children, the stages of action will be more rapidly passed through, and the period of painful contraction will more speedily return. Hence young people require to eat oftener than adults, and delicate persons cannot bear long fasting.

Various means are known to accelerate or to retard the approach of hunger: for this, like fatigue, may be brought on sooner by any thing which strongly

directs the attention of the mind to it; or it may be postponed by causes which otherwise engage the mind, and drives the attention from it.

Among the means which retard the approach of hunger, tying a belt tight round the waist is said to have that effect; the descent of the diaphragm being thus impeded, and consequently also in some degree the action of the stomach itself. Opium possesses also the power of assuaging hunger. The Turks employ it for this purpose, by taking three pills of it at once, one covered with two folds of paper, a second with one fold, and a third naked. By this contrivance they are made to dissolve in succession when received into the stomach, and retard the approach of hunger so much the longer.

But, however, although such methods as these of allaying hunger for a season may be occasionally employed, yet we do not advise our readers to have recourse to them upon common occasions. Opium in particular is a desperate resource, and it should be borne in mind that a Turk will often from habit take such a dose of this drug without inconvenience, nay with manifest advantage, as would kill a person not accustomed to it.

To prevent the calamity of famine, and the evils of excessive hunger at sea, Dr. Lind proposed that the powder of salep root should constitute part of the provisions for every ship's company. This powder and portable soup dissolved in boiling water, form a rich jelly; and an ounce of each of these articles, furnishes one day's subsistence to a healthy full grown man. It has the property also of concealing the nauseous taste of salt water, and may consequently be of great advantage when sailors are put upon a short allowance of fresh water. But as a preservative against hunger, it is asserted by others that salep is most efficacious when combined with an equal weight of beef suet.

The best remedy for hunger is, no doubt, our natural and daily food.

Gum arabic might be a good substitute for salep in the composition already

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recommended ; and as it will give such firmness to the mass, as to require the process of manducation, the saliva by this means carried into the stomach, would further contribute to assuage the sensations both of hunger and thirst.

Cakes made of the following ingredients have been recommended for the purpose of obviating hunger : take fine sugar four ounces ; of gum arabic one ounce ; levigate them well together, and add half an ounce of rose water, and of the whites of eggs a sufficient quantity. These cakes are not perishable in the hottest climates, may be carried about the person without inconvenience, and, though very tough, are pleasant to the taste. If, however, the quantity of sugar were lessened, and the gum arabic increased, we conceive that their good qualities would be improved.

In the restoration of persons who have been from any cause deprived of food for a long period, the greatest care and circumspection are necessary. Large doses of either food or drink given immediately will generally prove fatal. Gentle warmth, wine and water, nourishing broths or jellies, are to be administered gradually, and in small quantities at a time, till the strength of the patient enables him to bear more stimulating food.

HUNGER INSATIABLE, or *Bulimia*, is sometimes brought on by habitual indulgence in eating to excess, and at others it originates in a diseased state of the stomach itself, by which the food is thrown into the intestines too soon ; and unless the patient be indulged in his desire for eating he frequently falls into fainting fits. It is sometimes symptomatic of worms and other diseases.

In the removal of this unfortunate complaint, chalybeates and other tonics will generally be proper. In some persons brandy drunk in a morning has been useful ; and frequent smoking of tobacco has relieved others. Opiates offer a probable means of relief. Oil, fat meat, pork, and in short every thing which in a healthy person would be most apt to pall the appetite may be used as temporary expedients, but cannot

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not be expected to perform a cure. In some patients the pylorus has been found too large, in which case the disease is, most probably, incurable. A good deal will, perhaps, after all, depend upon the resolute determination of the patient himself, in the regulation of the quantity of the food which he consumes. Perhaps small, but strong doses of beef tea, when the complaint is accompanied with vomiting, as it sometimes is, is one of the best remedies.

HUNTING, the exercise or diversion of pursuing certain quadrupeds, whether those of game or prey.

We merely define this recreation to observe, that hunting only can be justifiable where animals injurious to us cannot be destroyed by other and more easy means. Relative to the destruction of animals

The sum is this. If man's convenience, health, Or safety interfere, his rights and claims Are paramount, and must extinguish theirs.

COWPER.

But the wickedness and cruelty of destroying any animal, how noxious soever, for our sport or diversion, is so apparent, as to require no comment or illustration.

HURDLES, in husbandry, certain frames, made either of split timber or of hazel rods wattled together, or of iron, to serve for gates in inclosures, for moveable fences, sheep-folds, &c.

When inclosures are too large for particular purposes, they may be subdivided by hurdles. In this way great advantage may be derived from the constant use of land that would otherwise be occupied by stationary fences, and the expense of subdivisions is thereby avoided. Wooden hurdles are most commonly employed ; but iron hurdles have latterly come into use. If made for sheep the cast metal is only 7s. each ; but if strong enough for cattle 9s.

HUSBAND AND WIFE, usually called baron and feme, are one person in law : that is, the very being or legal existence of the woman is suspended during the marriage ; or at least is incorporated and consolidated into that of

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the husband, under whose wing, protection, and cover, she performs every thing. She is therefore called in law *feme covert*; her condition during her marriage is called her *coverture*.

A man cannot grant lands to his wife during her *coverture*; nor enter into covenant with her; but he may covenant with others, (that is trustees,) for her use, as for her jointure or the like; and he may devise to her by will, because the devise, or will, does not take place till after his death. All deeds executed by the wife, and acts done by her during her *coverture*, are void, except a fine, or the like matter of record; and then she must be solely and secretly examined, that it may be known whether or no her act is voluntary. A wife if she commit a theft *in company* with, or by coercion of her husband, is not punishable, but the husband is.

By custom in London, a wife may carry on a separate trade; and, as such trader, is liable to the statutes of bankruptcy, with respect to the goods in such separate trade, with which the husband cannot intermeddle.

If the wife be indebted before marriage, the husband is bound afterwards to pay the debt, living with the wife: for he has adopted her and her circumstances together.

The bickerings and unhappinesses too often met with, in the marriage state, have been a constant theme of ridicule or of regret in most civilized communities. These bickerings and unhappinesses may be traced to various causes: the instability and versatility of the human mind itself; disease; disparity of years; disparity of fortune; incompatibility of temper; intellectual disparity; compulsory mandates of parents; gross self interest in one of the individuals; too much continuance together; pertinacity of opinion; extravagant expectations, &c. &c. We cannot be expected to suggest a remedy for all these evils. The young and inexperienced, however, should know that, in contemplating the marriage state, if they look forward to it as one in which they will find no unhappiness, in which *they*

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at least will form an exception to the vast number of marriages which they see around them abounding in unhappiness, in some way or another, and by some unforeseen and unexpected circumstances, their hopes will be considerably, although for their sakes we trust not completely, disappointed. They should remember that "the course of true love never did run smooth."

Or if some true and tender heart there be
On which, through every change, the soul
might trust,
Death comes with his fell dart, and smites it
to the dust.
BOWLES.

Even the very ardency and tenderness of our attachments carry often a lurking poison with them: need we name the agony and the death of a late lamented senator and amiable man: SIR SAMUEL ROMILLY.

He, therefore, who enters the marriage state with moderate hopes and expectations, and with a sincere desire of studying the happiness of his fair partner, while she in turn, as a duty, studies her husband's, has the best prospect of domestic comfort which offers upon the earth.

HUSBANDRY, the art of tilling the ground, and of otherwise managing it, and also of feeding and rearing cattle, so as to make them most advantageous, convenient, and economical.

This is an important subject, being the most necessary study and pursuit of man, affording to every country its best riches, health, and happiness, whether physical, moral, or political.

To know the nature and qualities of vegetable productions; to distinguish their peculiar habits; to understand what applications are proper, both to promote the growth of the useful and discourage the noxious; to determine the seasons, soils, and circumstances suitable for all such applications; to be well informed in the natural history of animals, so as to foster those useful to man, and to guard against such as injure cultivated vegetables, are studies sufficient to give full scope to intellectual powers: yet all these are requi-

HUSBANDRY

site to form an accomplished husbandman.

For ages husbandry was considered a degrading occupation, consigned only to the lowest of mankind. But happily the rays of truth have at length pierced the gross mists of prejudice and error: husbandry no longer despised, and the cultivation of our native land is become a fashionable and philosophical pursuit. We can only give a very brief sketch of this important art.

It is much to be regretted that sufficient attention is rarely paid by the farmer to the nature of the *CLIMATE* in which his operations are carried on. Unless the system which he adopts be calculated for the weather which his crops are likely to experience, every exertion will often terminate in disappointment. The system that is proper for warm and dry situations, is not suitable for cold and wet ones; and in a bleak and backward climate the nature of the soil ought not only to be attended to, but the utmost care ought to be paid to the early sowing of the earliest variety of seeds. Even the species of stock to be had or kept on a farm, should, in a great measure be regulated by the climate. A certain degree of heat is essential for bringing every plant, fruit, or grain to perfection. Thus English barley, of *equal weight*, is more valuable than the Scotch, because, from growing in a warmer climate, it is more fully ripened, and thence possessing more saccharine matter, it produces a greater quantity of spirits, and a stronger malt liquor. It has been calculated that in Great Britain, *sixty yards* of elevation in the land *are equal to a degree of latitude*; or, in other words, that sixty yards perpendicularly higher, are, in respect of climate, equal to a degree farther north.

It may be observed, that land, in the same parallel of latitude, other circumstances being similar, is always more valuable in proportion to the comparative lowness of its situation. Hilly countries are always colder than the plains: in considering the crops, therefore, to

be raised in any given situation, attention should be paid to the height above the level of the sea, as well as to its latitude. In latitude 54° and 55° in Great Britain, an elevation of 500 feet above that level is the greatest height at which *wheat* can be cultivated, with any probable chance of profit, and even there the grain will prove light, and ripen a month later than if sown at the foot of the hills. Between 600 and 800 feet, may be reckoned the usual maximum of elevation for the more common sorts of grain. There are occasional exceptions, where corn grows in higher elevations; but they are rare, and occur, generally, under peculiar circumstances, either of richness of soil, or of fineness of season.

The importance of the soil has been described in various ways. It not only supplies plants with nutrition but with heat. A well cultivated and rich, or highly manured soil, is much warmer than the surrounding atmosphere. In short, a favourable soil and climate are deservedly accounted the best riches of a country.

Soils are of various kinds: sand; gravel; clay; peat; chalk; alluvial, and loam, or that species of artificial soil into which others are generally brought by the effects of manure and earthy substances in the course of long cultivation. *Sandy* soils are calculated for turnips, potatoes, carrots, barley, rye, buck-wheat, pease, clover, sainfoin, and other grasses. A *gravelly* soil, free from stagnant water, gives such additional warmth to the climate, that vegetation is nearly a fortnight earlier than where other soils predominate; in a wet climate they answer well for potatoes. Poor gravelly soils, full of springs, and those sulphureous, are very unfavourable to vegetation; such are better suited to woods than to arable culture. Under proper culture, *clay* soils are well calculated for growing crops of beans, wheat, oats, clover, and winter tares; but they are not adapted for barley, unless immediately after fallow; nor for turnips or potatoes, unless under very peculiar management. Clay soils,

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however, become good meadow lands, and answer well for hay, or soiling when in grass; but from their aptitude to be poached, they are, in general, unfit to be fed by heavy cattle in wet weather. Arable clay lands should be ploughed previously to the winter setting in, in order to expose them to frost, which will render them completely mellow. In the spring a shallow furrow, or merely scarifying, will be sufficient, previously to sowing the seed. *Peat* soils are best adapted for hay crops, although wheat and barley have succeeded on such lands, after they have been supplied with abundance of calcareous earth; fiorin grass seems also well adapted to them. *Chalky* soils, where clayey or earthy substances abound in them, are productive; where sand or gravel is intermixed, they are light, and rather unfertile. The crops chiefly cultivated on such soils are, pease, turnips, barley, clover, and wheat; and, however much the soil is exhausted, it will produce sainfoin. A black, or blue substratum of tenacious marl, of a rich quality, lies generally under chalk, which, if dug up and mixed with it, not only cures its defects, but enriches it.

Alluvial soils are of two kinds; one from the sediment of fresh, the other of salt water. Those from fresh water lie generally along the sides of rivers, and are commonly employed as meadows. Salt marshes, if secured from the inundations of the sea, soon become rich pasture; or, if broken up for tillage, will produce wheat, barley, oats, clover, and beans. It is said also that, lime, in considerable quantities, is found to answer well for such soils. For many years, however, after they are broken up, they want no manure.

Loams are the most desirable of all soils, being friable, and can, in general, be cultivated at almost any season of the year; they are easily ploughed; and, above all, they are peculiarly well adapted for the convertible husbandry: for they can be changed not only without injury, but generally with benefit, from grass to tillage, and from tillage

to grass. Loams are of various sorts: sandy; gravelly; clayey; calcareous; peaty; and another called hazel loam.

In regard to *sub-soil* it may be observed, that the fertility of the soil itself often depends on the quality of the sub-soil. The nature of the sub-soil, as well as the soil itself, must be ascertained before the farmer can with propriety select his plants, determine on the species of manure to be employed, or arrange his course of cultivation.

The superiority of British husbandmen over those of other nations, may, in great measure, be attributed to the numerous and valuable IMPLEMENTS employed in the various processes of agriculture. We can do little more than enumerate the most important of these: The *Plough* is the chief; a great variety of which is in use; but the *swing plough*, the *wheel plough*, the *trench plough*, the *double furrow plough*, and the *paring plough*, are the chief. The swing plough, on the whole, is greatly preferable for general purposes. *Harrows*, *hoes*, and *horse-hoes*, are also very useful. The *scuffler* is a useful implement on light lands. The *scarifier* or *grubber*, is an improvement on the scuffler. It is an efficient instrument that up extensive farmer should be without. The *cultivator* is also another similar instrument much used.

The implements for *sowing corn* are, a *hopper*, or basket; the *drill machine*, and the *dibble*.

The implements for *reaping corn* are, the *sickle*, *reaping hook*, and *scythe*. Attempts have been made to reap with a machine, but they have not succeeded.

There are three sorts of machines for *threshing and cleaning* corn; the *threshing machine*; a machine for *dressing barley*; and *fanners*, or winnowing machines. Threshing mills, or machines, are driven by various powers: by horses; oxen; wind alone; or cattle when wind fails; water alone; or by cattle when water fails; and by steam. A six-horse power is little enough for all the necessary operations of a farm where wheat is cultivated.

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The implements for making hay are, the *scythe*, the *rake*, and the *fork*. But instead of the usual mode of *tedding* grass, a machine has been invented, of a circular form, with spikes, by which the largest crops are separated, thrown into the air, and scattered about in the most perfect manner. When the hay is to be stacked in the field in which it grew, and it has been formed into large wind-rows, a machine called a *sweep* is sometimes dragged along the field by four horses in pairs. It is so easily and expeditiously loaded, that it is of great use in precarious weather.

Of all the implements of conveyance, the *cart* is, beyond a doubt, the cheapest and best. *Irish cars* have their advantages; *tumbrils* are also of use for particular purposes.

The *Roller* is of great use in certain states both of arable and grass lands.

For the dairy the most essential implements are, *milk-pails*, *churns*, *milk-pans*, *cheese-shapes*, *cheese-tubs*, and *presses*.

A variety of small implements for the barn, for the stable, and for the other offices, are necessary, but do not require a particular enumeration. The *straw-cutter*, the *turnip slicer*, the *bruising machine*, for beans, pease, or oats, and the *weighing machine* are, however, too important to be omitted.

Of all the various implements above enumerated, an account of those of more essential utility will be found in the order of the alphabet; to which, therefore, for further particulars concerning them, we must refer.

One of the most essential considerations in all husbandry is a command of good water. No farm ought, if possible, to be situated where this necessary fluid is not to be obtained in plenty, and of a good quality. Open ponds of water, it should also be recollected, are to be preferred, on a variety of accounts, for slaking the thirst of cattle, to spring or well water.

The *size and shape of fields* are also deserving of attention: small fields and high hedges are, for arable lands and low level districts, very improper. They

may, however, be occasionally useful for particular purposes of the dairy or sheep farm, and in very exposed situations. In short, for corn lands, the larger the size of the fields, and the fewer the trees round them, the better, in general, the crop must succeed. But grazing lands admit, or even require shelter for the stock in winter, and in the summer shade.

We come next to the consideration of *manures*. *Putrescent* manures are the dung of quadrupeds, birds, town-dung, night-soil, land animal substances, and fish. Farm-yard dung forms one of the best and most valuable of all manures. The heap should stand in such a place that the water which runs from it may be preserved, and pumped back again upon it; or, which is a better practice, it should be pumped upon heaps of earth calculated to receive it. In too many farm yards, this valuable liquor is wasted. Stable dung is also an excellent manure. Town dung, and night-soil are also valuable manures; night-soil is the richest of all manures, and if dry the cheapest; lime is also a very good manure: so also is every species of animal offal; and even bones, when pulverized.

The *calcareous* manures are also often of great utility. Lime freshly burnt, or slacked, forms a compost with vegetable matter, which is soluble in water, and nutritive to plants. Mild lime, as chalk, or quick lime, again impregnated with carbonic acid, chiefly operates, it has been supposed, by improving the texture of the soil, and its relation to absorption; but we are, however, of opinion, that the actual reason why lime is useful as a manure is at present unknown. Pounded limestone, lime-stone gravel, chalk, marls, sea-shells, soapers' waste, and gypsum, may also be used in given situations with advantage.

Earthy manures are, mould, or loam, peat earth, clay or sand, burnt clay, sea ooze, or warp, canal, pond, or river mud, and road scrapings.

Vegetable manures are, of course, numerous: the chief are, sea-weeds, fresh-water weeds, common weeds, malt

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dust, rape cake, tanners' bark, and burnt vegetables; such as wood-ashes, peat-ashes, kelp-ashes, and burnt straw.

Of miscellaneous articles of manure, *common salt* may be mentioned as of considerable importance, more especially since, for such purpose, the government has rescinded a considerable part of the duty. (See SALT.) *Soot* is also an excellent manure.

In the *cultivation of arable land*, the first point to be considered is the utility of dividing the land into ridges, and the size and form in which they ought to be made.

Dry soils, being deficient in moisture, ought to be tilled flat, as any sort of drawing which the furrows might afford would be prejudicial rather than advantageous. But ridges are essential in wet soils and climates. The *length* of a ridge must vary according to the size of the field, the acclivity of the ground, and the nature of the soil, whether wet or dry. In fields of much acclivity, ridges of 150 yards are found of a convenient length. In wet soils, where the ground is flat, a ridge may be 240 or 300 yards long.

Relative to the *width* of ridges, great difference of opinion prevails; as a general maxim, it may be laid down that, *as in dry porous soils the ridges cannot be too broad, so, in wet clays, they cannot be too narrow*. In addition to every other consideration, the breadth of the ridge must be regulated by the mode of culture. Where the broadcast system is followed, the size must be such as to enable the sower to scatter the seed equally over the land; whereas, when the drill system is adopted, the breadth must be adjusted to the size of the machine. The ridges should always be made as straight as possible; and in wet land they should be well rounded, so as to form a segment of a circle, without being carried to so ridiculous an extreme, that two men, standing in the furrows, cannot see each others heads.

The line of direction of ridges is, in steep grounds, of much consideration.

From every practical observation, the best mode of tilling such ground, and laying out the ridges, is *from the top of the bank sloping to the right*. If there be soil enough, any ground, however steep, may be cultivated on this plan: it may be added, that, if the ground will permit, the ridges should be directed north and south.

The simplest, the most economical, and perfect mode of *ploughing for general purposes*, is by a swing plough with a pair of horses, without a driver. In working with the two-horse swing plough, the off-side horse walks in the furrow already made; the near-side horse on the untilled land, the ploughman in the new furrow: the depth which land should be ploughed must in some measure be regulated by the deepness of the soil. On thin soils, more especially on a substratum of rock, the ploughing must necessarily be shallow; but when the soil, whether light or strong, will admit of it, a furrow ought to be given as deep as a pair of horses can accomplish; and it is occasionally advantageous to plough it even with four horses at the commencement of every fresh rotation. Deep ploughing is advantageous on every soil, excepting those where the substratum is of an ochry sand. Deep ploughing is, however, to be avoided when lime or marl has been recently applied, where turnips have been eaten off by sheep, where grass only two or three years old is broken up; in all these cases from four to five inches deep will be found sufficient. And if lands infested with natural grasses, the first ploughing should not be deeper than is necessary to turn up the roots of the grasses that they may be destroyed. The advantages of deep ploughing are, however, various and great; one of the chief of which is, that of bringing up new mould to the surface. Another is, that as the soil will be loosened to a greater depth in wet seasons, this is of no trifling consideration; and in a dry season it is still more useful, forming as it were a reservoir of moisture. In a word, deep ploughing is

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generally attended with good crops, and shallow ploughing frequently with indifferent ones.

The season of ploughing depends upon a variety of circumstances. In very dry, light land, ploughing should be carried on in damp weather. Tenacious soils ought to be ploughed when neither wet nor dry. And all corn stubbles, not having clover or other plants on them, should be ploughed as soon after harvest as possible, and thus be put into a state of receiving benefit from the winter frosts.

The system of *scarifying*, that is putting in crops without ploughing, appears to be coming into practice; and it is said that if one ploughing to the full depth be given once in twelve, eighteen, or twenty-four months, shallow tillage afterwards by scaling, scarifying, skuffing, skimming, or broad-sharing, is in many cases preferable to frequent deep working, and especially for wheat which loves a firm bottom. This doctrine is well entitled to the attention of the practical farmer.

Harrowing is also of essential use in the culture of arable lands. There are two modes of driving the harrows, either leading the horses, or driving them by whip reins. The latter is to be preferred for many reasons.

Rolling is also an operation of great importance: by this practice the strongest and most obdurate clods may be reduced, and the harrow and the scarifier enabled to tear out the roots of couch grass and other destructive weeds.

Treading after the seed is sown is, also, a practice which has been strongly recommended. In some districts it is usual either to fold the sheep on the ground sown with wheat, between the sowing and the coming up of the crop, or to drive the flock repeatedly over it at that juncture. By these means wheat may be raised on land naturally too loose for the profitable production of it. Some farmers, however, prefer pigs for this purpose; and in West Sussex the lighter soils in dry seasons are treaded by the plough horses, three being placed a-breast when turning the seed

furrow. Treading is unquestionably more effectual than rolling in destroying the larvæ of insects, and preventing the harbouring of vermin in the soil; it has also some other advantages. But it is most applicable to dry light soils; but even in wet ones, when the land cannot be rolled, it may be trodden by sheep.

With respect to the *choice of seed*, although blighted grain will vegetate, and in rich soils and favourable seasons may produce abundant harvests, yet the prudent farmer ought not to rely upon the chance of such an event. When domestic seed is relied on, it is an excellent practice to select from the growing crops the ears which are soonest ripe, and which are of the plumpest quality; by this means the produce of a farm may be greatly improved.

A change of seed is in general to be recommended, as founded on rational principles: for every species of grain has a climate adapted to it where it flourishes, where it grows to perfection, and where it never degenerates. In Sicily, where wheat grows naturally, the seed dropping from the mother plant arrives at perfection, though neither that nor the soil be changed. But wheat is not a native of this country, and here it *degenerates rapidly* if the seed be sown year after year where it is produced. It is not, therefore, sufficient that the seed be taken from a different field, it ought to be taken from a different soil and from a different atmosphere.

The *quantity* of seed per acre requires considerable attention. On light thin soils the quantity of seed ought to be moderate; whereas in strong stiff wet retentive soils, a large proportion of seed will be necessary. Seed sown early takes deeper root, and has more time to branch out additional shoots than that which is late sown, consequently a less quantity is sufficient. The state of the weather when the seed is put into the ground must likewise be considered: for when the season is very dry, more of the seed may fail to vegetate than when the contrary is the case. Hence a large quantity is required; and hence the propriety of steeping and putting in the seed in dry

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seasons immediately after the plough. The manner of sowing must also regulate the quantity to be sown : broadcast requires more than either drilling or dibbling. It cannot be here necessary to state the different quantities of the different grains and pulse sown per acre, as they will be found under the respective articles of **BARLEY**, **BEANS**, **CLOVER**, &c. in the order of the alphabet, to which, therefore we refer.

Transplanting of grain crops has not hitherto attracted the attention of the practical farmer ; but upon some occasions it is presumed that it may be advantageously practised. The transplanting of the Swedish turnip has however succeeded in several districts. The seed is sown the latter end of April in a garden. If the weather be favourable the turnips are ready to be transplanted in June ; sometimes not till the middle of July. The land is to be manured and prepared as for drilled turnips, and the plants are set from twelve to eighteen inches apart in the row : the greater distance the weightier in general is the crop. They are afterwards to be treated the same as the com non drilled turnip. When transplanted the roots must be dipped in dung water.

The *culture* of the various crops whilst growing, will be found under the several articles in the order of the alphabet, to which the reader will of course refer.

Reaping is performed either by the sickle or the reaping-hook. The sickle, it is said, does not require to be so often sharpened as the hook ; and it has the advantage of keeping the corn better together. A hook called the *Cardigan-hook*, is also highly spoken of.

An improved implement for cutting corn, one half from the point hooked like a sickle, and the remainder smooth and sharp, invented by Mr. **JOSEPH HATTON, JUN.** has a great sale, and effects a great saving in corn. See *Transact. of the Society of Arts*, Vol. xxviii. p. 54.

The scythe is frequently made use of for cutting oats and barley ; and in some parts of Kent it is even used for wheat.

It is either plain, or furnished with a bow or cradle to assist in laying the heads more regularly in one direction. But when the crop is much lodged or broken down, the scythe cannot be used with any advantage.

In reaping it is a most essential object to cut the crop very low, that any waste of straw, or loss of grain, may be prevented. Cutting corn when wet ought to be avoided : for, when put up in a damp state in a close sheaf, it cannot get dry. In bad harvests the sheaves ought to be *gaited*, that is set up singly, loosely tied near the ear ends of the straw, and spread out circularly on their butts or ends to give them a firm standing. The sheaves ought to be of a moderate size, not exceeding nine inches in diameter, or thirty inches in circumference. In wet seasons six or eight inches in diameter are quite enough ; and instead of binding with two lengths of the corn made into a rope, one is sufficient. Nor ought the knee to be applied when the sheaf is bound, as the air is thereby too much excluded. The binder's arm will compress the sheaf as much as it ought to be, provided the size be such as is here recommended.

Corn when cut down is usually put into sheaves and shocks, (called in some districts *stooks*, in others *stitches*), or two rows, of five or six sheaves each, with two or more spread open on the top for protection against rain, called hooding the sheaves. In wet seasons the crop is sometimes put into small stacks in the field, where it remains till it be fit to be removed to the stack-yard.

The old practice of stacking corn on the ground in the yard is very improper. Corn may be, and is, perhaps, best preserved in the open air, either in corn stands built of brick or stone, or upon pillars made of stone or cast-iron ; cast-iron is to be preferred. Seven or nine pillars of cast-iron are sufficient for a common stack or rick : a frame of coarse wood is laid upon the pillars.

There is a practice in Scotland of using what are called *bosses*, which, when joined to cast-iron pillars, has

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brought the stacking of corn to great perfection. They are thus formed: a triangle is first erected in the middle of the frame, which forms a boss or hollow about three feet wide, a few spars of fir are nailed across the boss, so close as to preserve the sheaves from falling from it; but when those cannot be got, a straw rope is commonly used in their stead. After the builder has reached the top of the boss, he places on it a sack filled with straw, which, when he builds round it, he pulls up until he reaches the top of the stack. By these means crops of wheat, barley, or oats, can be harvested with less exposure to the weather and in better condition. In bad weather by these bosses, one row of sheaves of corn may be put on the stacks *from the sickle*, placing the head of the sheaves to the centre, and may thus be effectually secured.

We have thus pointed out, in a summary manner, the best method of rearing grain crops. Concerning what relates to THRESHING, BREEDING, and FATTENING CATTLE, the DAIRY, &c. &c. we refer our readers to the numerous articles in the order of the alphabet; and particularly to BREEDING, BUTTER, CHEESE, COW, BULL, HORSE, OX, ROTATION OF CROPS, THRESHING, &c.

We cannot close this article without strongly recommending the last valuable work of the patriotic Sir JOHN SINCLAIR, "*The Code of Agriculture*;" a work which should be in the hands of every practical agriculturist in the world. For more extensive information DICKSON'S "*Complete System of Practical Agriculture*" should also be consulted.

Huxham's Tincture of Bark. See PERUVIAN BARK.

HYACINTH, or *Hyacinthus*, a genus of flowers consisting of twelve species, chiefly natives of the Cape and the South of Europe. The species principally cultivated in the gardens of our own country is the *orientalis*, a plant indigenous to both Asia and Africa, and affording infinite varieties. The Dutch florists are particularly fond of the hyacinth, and propagate it in most of its

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species, and produce a great number of varieties. Our own specimens are hence chiefly obtained from Holland. They are best propagated by the root, and should be carefully taken up every summer soon after their flowering, and be planted again in the autumn. The finest are commonly planted in pots for windows.

The common blue harebell, or *non-scriptus*, found in the woods and dry banks of our own country, and flowering in the spring, is a species of hyacinth. The fresh roots of this plant are said to be poisonous; but, notwithstanding, a considerable quantity of starch may be obtained from them.

Hyæna. See DOG.

HYBRID, a term in zoology as well as botany, applied to a kind of monster produced from a mixture of two different species. Amongst animals the mule is a hybrid.

HYDATID, a very singular animal, formed like a bladder, and distended with an aqueous fluid. It is arranged in the Linnean system of zoology in the class worms, genus *tenia*. The hydatids have been found in mammals, serpents, and fishes; but chiefly in the first of these classes: and more commonly in the liver of man, and the liver and brains of sheep, than in any other animal tribe or organs. If the powers of nature be not sufficient to effect the expulsion of these animals, or the cure of the disease occasioned by them, the patient mostly falls a sacrifice to their ravages.

HYDRAGOGUE, a medicine which possesses the property of increasing the secretions or excretions of the body, so as to cause the removal of water from any of its cavities: such as tonics, diuretics, cathartics, &c.

HYDRANGEA, in botany, a genus of plants consisting of four species: three American and one a Chinese plant. The *arborescens* has white inodorous flowers; stamens from eight to ten: a native shrub of Virginia. The *hortensis*, a branched shrub of China, now very generally to be met with in most of our green-houses, and distin-

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guished for its beautiful and somewhat lilac flowers. In favourable situations in this country it will survive the winter in the open air; but is best preserved in pots and green-houses. It is propagated by suckers.

Hydrargyrum. See **QUICKSILVER**.

HYDROCELE, a dropsy of the scrotum, known by a soft pyramidal fluctuating, and, generally, pellucid swelling of the scrotum, increasing slowly and without pain. It should be carefully distinguished from hernia. The cure of this complaint requires the operative and dexterous hand of the surgeon.

Hydrocephalus. See **Dropsy of the Brain**.

Hydrofluoric Acid. See **FLUORIC ACID**.

HYDROGEN, or **INFLAMMABLE AIR**, a colourless æiform fluid, not absorbable by water. It has no taste, a slightly disagreeable smell, and may be respired for a short time, though it is instantly fatal to small animals. It is the lightest body known, being about fifteen times lighter than atmospheric air. When pure it burns quietly with a lambent blue flame at the surface, in contact with air; but if mixed with thrice its volume of air, it burns rapidly and with explosion. In making an experiment of this kind, a strong phial capable of holding about six ounces of water may be employed; or the inflammable air pistol, which admits of the mixture being fired by the electric spark. If two volumes of hydrogen and oxygen be burned in the same way, the explosion is extremely violent.

Hydrogen may be obtained by the action of iron or zinc upon diluted sulphuric acid. Having procured a flask or phial with a bent tube ground, and adapted to its neck, some pieces of iron wire or zinc may be introduced into it, and covered with sulphuric acid diluted with six times its bulk of water. The gas escapes by the bent tube, and may be collected in the hydro-pneumatic apparatus. See **GAS**.

When two volumes of hydrogen gas are mixed with one volume of oxygen gas, and the mixture inflamed by the

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electric spark, the gases totally disappear, and the interior of the vessel is covered with drops of pure water, equal in weight to that of the gases consumed. See **THUNDER**.

If pure water be exposed to the action of galvanic electricity, it is resolved into two volumes of hydrogen disengaged at the negative pole, and one volume of oxygen disengaged at the positive pole: so that water is thus proved by synthesis and by analysis to consist of two volumes of hydrogen, combined with one volume of oxygen. The specific gravity of hydrogen compared with oxygen, is as 1 to 15; 100 cubic inches of hydrogen weigh at a mean temperature and pressure 2,25 grains.

Hydrogen, in consequence of its extreme lightness is employed for filling air balloons, and is elegantly applied to the purpose of obtaining instantaneous light in Volta's inflammable lamp.

Hydrogen combines with carbon, and forms the gas so well known and so much used for lighting our streets. See **CARBURETTED HYDROGEN**. It also combines with many other substances; it forms with sulphur a gas called **SULPHURETTED HYDROGEN**, which see.

The tendency which gaseous fluids have to become completely mixed under all circumstances, and as it were to penetrate each other, is well illustrated where hydrogen is employed. Thus if two small phials, the one containing oxygen and the other hydrogen, be connected perpendicularly by a long glass tube of small bore, it will be found that although the hydrogen be uppermost and much lighter than the oxygen, it will, in the course of a few hours, have perfectly mixed with the oxygen, and the gases will be found in equal proportions in both phials. Gases are, therefore, unlike other fluids; they do not remain upon each other without admixture. See **OXYGEN**, and **WATER**.

HYDROMETER, an instrument contrived to measure the gravity, density, &c. of water and other fluids. There are various kinds of hydrometers: those constructed by Mr. CLARKE, Dr. DESAGULIER'S, Mr. NICHOLSON,

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FAHRENHEIT, and **BAUME**, have different degrees of merit; but one of a very simple construction by **JONES** has been very highly spoken of. The only correct mode, however, of ascertaining the specific gravity of liquids, is by weighing them in a delicate balance against an equal volume of pure water of a similar temperature.

HYDROPHOBIA, a disease distinguished by the peculiar symptom of a dislike to, a fear of, or a loathing of water. We have treated of this disease at large under the article **BITE OF A MAD DOG**, to which, therefore, we refer; but since that article was printed, another medicine for its cure has obtained some notice. It is the *Scutellaria lateriflora*, or **SCULL-CAP**. See that article. It appears in a "*History of the Introduction and use of this medicine*," by **DR. SPALDING**, of New York, lately published, that the *scutellaria* has been used by more than eight hundred and fifty persons bitten by animals believed to be rabid; and in only three instances have symptoms, supposed to be hydrophobia, supervened. It has also been administered to many hundred brutes, bitten by animals supposed to be rabid, and in no instances have madness appeared, except in the cases communicated by **Dr. Bartlett**.

The best mode in which the scull-cap can be given, appears to be in a strong decoction, or infusion made with the dried or green herb, and taken in doses of half a pint each, four times a day, or as the stomach will bear it, the dose to be omitted every other day, and a table spoonful of flowers of sulphur in new milk to be taken in its stead. This mode of treatment is to be begun as soon as the person is bitten, and continued till the effects of the disease are past. For greater security, the bruised leaves of the plant may be applied to the bitten part, which, if healed, should be punctured, and renewed every four or six hours.

HYDROPS, a dropsy. See **DROPSY**.

HYDROSULPHURETS are combinations of sulphuretted hydrogen with earths, alkalies, or metals.

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The *hydrosulphuret of ammonia* is the principal of these, which is in much use as a test for the metals, and may be procured by distilling at nearly a red heat, a mixture of 6 parts of slacked lime, 2 of muriate of ammonia, and 1 of sulphur.

Hydrosulphuret of potash is also used for the same purpose. This last precipitates gold and arsenic *yellow*;—silver, copper, iron, tin, lead, nickel, bismuth, tellurium and cobalt, *black*;—quick-silver, *brown black*;—zinc and manganese, *white*;—antimony, *orange*;—uranium, *brown*;—titanium, *glass green*;—chromium, *green*.

HYDROTHORAX, a dropsy of the thorax, or chest. See **DROPSY**.

HYGROMETER, an instrument used to measure the degrees of dryness or moisture of the atmosphere. There are various kinds of hygrometers: whatever body swells or shrinks by dryness or moisture is capable of forming a hygrometer. A new hygrometer, lately invented by **Mr. Daniel**, and described in the 16th and 17th Nos of the *Journal of Science*, &c. is, we presume, one of the best.

HYMEN, in anatomy, a thin membrane of a semilunar or circular form, placed at the entrance of the vagina, which it partly closes. It has a different appearance in different female subjects, but it is generally, although not always, found in virgins; and is very properly esteemed a test of virginity; being commonly ruptured in the first act of coition. Some rare cases, arising from its strong ligamentous texture, or sometimes its wholly closing the entrance of the vagina, require a surgical operation before a consummation of marriage can be effected.

HYOIDES, a bone situated between the root of the tongue and the larynx. It serves to support the tongue, and affords attachment to a variety of muscles.

HYPERBOLE, a figure whereby the truth and reality of things are excessively enlarged or diminished. Hyperboles are, in numerous instances, particularly in poetry and passionate lan-

HYPOCHONDRIASIS

guage, eloquent additions to the subject. But hyperboles in common discourse, and upon occasions of a serious and important nature, where a strict adherence to truth is required, are inadmissible. The young and volatile are much given to hyperboles; and so also are most persons with vivid imaginations; but the sober chastity of morals and philosophy, and the gravity of age, require a very restricted use of these figures.

HYPOCHONDRIASIS, one of the most distressing diseases which afflicts the family of Adam. It is characterized by dyspepsia, languor, and want of energy, costiveness, dejection of mind, and apprehension of evil, more especially respecting health; and to all but the patient himself, it appears often to arise from inadequate causes. It occurs with a melancholic temperament; but is also met with in persons of the most lively natural disposition. Indeed its varieties are so great as to defy description. It may either arise from general debility, from a diseased stomach, the liver, or some other organ; in a word, whatever has a tendency to introduce debility, whether excess or deficiency of food or drink; irregular passions, or improper indulgence in them, are the fruitful parents of this disease.

The unfeeling and unkindness with which it is, too often, the practice to treat hypochondriacal patients, cannot be too strongly deprecated: for although such persons frequently *appear* well, they most certainly do not feel so. It is absurd to suppose that, if nothing ailed them, they would continue their apparently querulous complaining; at the same time it is, no doubt, possible by mismanagement, to aggravate the mental maladies of these unfortunate patients.

The principal objects in the removal of hypochondriacal complaints are, besides in the first instance a careful attention to the food and drink, and the keeping open the bowels by aloetic purges, (See ALIMENT, APPETITE, COSTIVENESS, DEBILITY, DYSPEPSIA, and EXERCISE,) an engagement of both body and mind in *some active and useful pursuit*; and, if possible, an entire

removal from those scenes and circumstances in which the disorder first originated; together with that exhilarating-prophylactic, cheerful company, and a careful abstraction of every thing which may introduce a consideration of the malady itself, or the train of ideas which is its too common accompaniment. It rarely happens that this course can or will be adopted by the patient himself; but if he can be persuaded that his complaint may be, if not removed, yet much alleviated, he will hardly object to means so desirable to ensure him comfort in his bodily feelings, and a soothing relief to his perturbed mind. It is in the power of affection and of friendship, in cases, to perform wonders; and there can be no doubt that *perseverant kindness* is one of the principal means, in addition to what we have besides pointed out, by which the mental distortion of the hypochondriac may be cured, and his bodily health improved.

We have said that a careful attention to food and drink is, in this complaint, necessary. It is not only necessary, but we must emphatically state, that without a strict regulation of the diet, and avoidance of all flatulent food and drink, and excess of every kind, no hypochondriac can expect a cure. Malt liquors, new bread, baked pastry, &c., are to the hypochondriac absolute poisons in many states of the disease; even a single glass of imperfectly fermented, or of home-made wine, will sometimes disorder the system for many hours. Water, therefore, for a constant beverage, and with the food, is the best; to weak brandy, and water, gin and water, or a glass of good wine after dinner, according to circumstances, there are certainly no solid objections; but labour of various sorts, riding, walking, rowing, &c., and engagement of the mind, are among the best of the remedial processes.

Where the complaint is more immediately the effect of a diseased liver, the aloetics given to relax the bowels may be combined with small doses of calomel: one grain of two at bed-

HYSTERIA

time; or the *blue pill* may be given. See **QUICKSILVER**. Bark, chainemile flowers, and other bitters, may occasionally be of service; but, in general, the use of drugs, taken for the purpose of increasing the tone of the stomach, appears to be of very secondary consideration, and frequently inefficient. Soda water, and 'magnesia, may be occasionally useful in absorbing any temporary acidity, but it should be recollected, that these do not add, in general, to the tone and powers of the stomach itself; and that it is much better to avoid such food as will produce acidities there, than to take any medicine to absorb or expel them when generated.

On this disease we speak feelingly, and from considerable experience. The advice here given arises, therefore, from a deep conviction of its importance and utility. See **GOUT** and **GRAVEL**.

HYPOCRISY, dissimulation; particularly relative to morals or religion. Hypocrisy is always considered in a bad sense; it cannot be justified: and its impropriety is so generally felt, that no person likes to be thought a hypocrite. See **DECEIT** and **DISSIMULATION**.

HYSSOP, or *Hyssopus*, a genus of plants comprising four species; two American, one Chinese, and one a native of Siberia and Austria. The last is best known, and most cultivated: it is the *officinalis*, with flowers in whorls; the leaves are lanceolate; the plant is a branching shrub. The leaves have an agreeable aromatic odour, and a bitterish warm taste. It is supposed to be stimulant and tonic, and is in some of the materia medicas, but is of no importance.

Hyssop, the hedge. See **HEDGE HYSSOP**.

HYSTERIA, or *Hysterics*, a convulsive disease, which comes on at uncertain intervals, sometimes longer, and sometimes shorter, but at no stated time. The paroxysms commonly begin with a languor and debility of the whole body; yawning, stretching, and restlessness. A sense of coldness in the extremities, almost always precedes, and for the most part accompanies the whole of

the paroxysm. To this sometimes succeeds a sense of heat, and the two sensations, alternate with each other, in different parts of the body. There is a violent pain in the head; the eyes are dim, and pour out tears; a rumbling inflation of the intestines is also heard; a sensation is also felt of a globe ascending from the lower part of the abdomen, then to the throat, and lastly it comes up to the throat, inducing a sense of suffocation, and difficulty of breathing and swallowing. Patients frequently faint; and sometimes they lie without motion, as if they were in a deep sleep. Sometimes they are very generally convulsed, and the disease appears like epilepsy. The mind is also very much affected, as well as the body; sometimes the patient laughs, at other times cries immoderately. The symptoms are, indeed, so very various, that they cannot be enumerated.

It may be considered as a disease peculiar to females, although it is said that men have been attacked with it. It most frequently attacks females of a weak and lax habit of body; and comes on generally between the age of puberty and thirty-five; its attacks are also more frequent during menstruation than at any other time; and it more frequently seizes on sterile females, and young widows, than such as are bearing children.

This complaint is very rarely fatal; but it is sometimes difficult of cure. Much depends upon the patient herself, particularly relative to the kind of food and drink which she takes; and also the due regulation of the passions of the mind, exercise, &c. &c. What is said under **ALIMENT**, **APPETITE**, **CONSTITUTION**, **DYSPEPSIA**, **EXERCISE**, and **HYPPOCHONDRIASIS**, will be very often applicable to this disease; although it may sometimes happen that no permanent debility is present; and, in such case, farinaceous vegetable food may be advantageously taken. No food, however, which produces flatulence, can be, in this disease, admissible.

In the fit itself, where the extremities are cold, it will sometimes be service-

HYSTERIA

able to keep the feet, legs, and hands in warm water for ten or fifteen minutes, or even more. Friction of the extremities will also, at such times, be of service. *Sal Volatile*, or liquor of ammonia, may be applied to the nose; but such applications will not cure the disease, although they may relieve the patient from the fit. Opiates have also been of service in allaying the morbid irritation; these, however, it should be remembered, are only palliatives.

Asafoetida has been recommended: it may be taken in the form of pills. See GUM PILLS. The bitters, such as bark and chamomile flowers, may be often of service; and where considerable debility is present, the following medicine, persevered in for some time, with a judicious regulation of the diet, will be found very advantageous; always remembering to obviate costiveness by aloetics, and to take the most nourishing and easily digestible food: Take of a strong infusion of chamomile flowers six fluidounces; of cam-

phor mixture one fluidounce; of pepper-mint water, six fluidrachms; of carbonate of ammonia eight grains; of compound spirit of lavender two fluidrachms; water one fluidounce and a half. Mix them together. Of this mixture let two table-spoonfuls be taken twice a day, with one scruple, (the bigness of a horse bean,) of the following electuary. Take of powdered Peruvian bark half an ounce; of ginger root, in powder, two scruples; of conserve of orange-peel five scruples; of syrup of ginger sufficient to form an electuary.

In the further management of this complaint, we can only repeat what we have said under hypochondriasis, that besides the regulations relative to diet and medicine, kind and affectionate treatment, change of scene, pure air, &c. &c., promise the most effectual means of relief. In some cases of this kind, as in chlorosis, marriage may be the most effectual remedy.

I.

IBIS

Ibex. See GOAT.

IBIS, or *Tantalus*, a genus of birds consisting of twenty-three species, scattered over the warmer climates of the globe. The bill is long, subulate, rounded, and subarched; face naked; tongue short, broad; jugular pouch naked; feet four-toed, palmate at the base. The following are chiefly worthy of notice.

The *Ibis*, or Egyptian Ibis, has the face red, bill pale yellow, quill-feathers black; body whitish, rufous. From thirty to forty inches long: inhabits in vast numbers the lower parts of Egypt. This bird, so faithful in the service of its native country, was made the emblem of it. Its figure, which we find wrought

on all the ancient Egyptian monuments, represents Egypt, where divine honours were paid to it by the superstitious inhabitants. The intention of the legislator in consecrating this bird was, no doubt, to preserve and to multiply animals that destroyed the noxious reptiles with which Egypt abounds. Even after it is satiated, the ibis is continually occupied on the banks of the Nile, in destroying locusts, caterpillars, and serpents. So sacred did the Egyptians hold this bird, that, it is said, there are several pits in Egypt where the dried skeletons of birds are found, preserved as mummies, and they have been, most generally, recognised as ibises. It has been objected, however, to this account

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of the ancient honours rendered to the ibis, that storks, kites, and vultures are all hostile to serpents, and the figures in their hieroglyphics are not sufficiently distinct to determine exactly what species of the serpentivorous bird was intended.

The *Loculator*, or Wood ibis, has a bluish face: the bill reddish, nine inches long; the body white, legs, quill, and tail-feathers black: two other varieties. Three feet long, inhabits New Holland, and the warmer parts of America; slow in flight, and stupid; feeds on fruit, fishes, and reptiles: flesh good.

The *Leucocephalus*, or White-headed ibis, has the head, neck, and body white; bill and face yellow; legs pale flesh colour; rump with long rosy feathers. Inhabits India: the largest of the tribe.

The *Ruber*, or Scarlet ibis, has the face, bill, and legs red; body scarlet; wings tipped with black; twenty-one inches long; inhabits South America.

The *Igneus*, or Glossy ibis; head and neck black: bill green, legs green; body varied with glossy blue, blackish green, green and claret; beneath dark rufous; quill and tail feathers green gold; thirteen inches long; inhabits Russia; was once shot in Cornwall.

ICE, water in the solid state. When water is exposed to a diminished temperature, it congeals into ice, which, if slowly formed, produces needles crossing each other at angles of 60 and 120. During this process of solidification, the temperature remains constant, being at 32° of Fahrenheit.

Ice is considerably lighter than water, its specific gravity being only .94; of course it always floats upon water; a quality of the greatest value and importance to man.

During congelation, most of the gasiform fluids which are, in its liquid state, contained in water, become separated in the elastic form and exhibit bubbles in the ice, unless the congelation have been gradually effected from the bottom or one of the sides; in which case the bubbles are driven

out, and the ice is much clearer. Although water, in passing into the state of ice increases its dimensions, and, if confined, acquires a prodigious force, sufficient to burst the strongest iron vessels, and even pieces of artillery, this expansive force of frozen water does not arise from the extrication of gases, but is to be attributed chiefly to a different arrangement of its parts: the colder ice becomes the more its expansive force is increased. *See COLD, FREEZING MIXTURES, and WATER.

Ice is frequently applied by surgeons to resolve external inflammatory diseases.

Ice-Boat. See BOAT, *ICF.*

ICE-HOUSE, a repository for the preservation of ice during the summer months.

The aspect of an ice-house ought to be towards the south-east, on account of the advantage of the morning sun in expelling the damp air, which is far more prejudicial to it than warmth. A chalk-hill, or declivity, is the best situation on which it can be erected, as it will carry off the waste water without an artificial drain; or where such land cannot be procured, a loose stony, or gravelly soil on a descent is to be preferred. The spot should be at a convenient distance from the dwelling house. A cavity is then to be dug in the form of an inverted cone, the bottom being concave, so as to form a reservoir for the reception of waste water. Should it be necessary to construct a drain, it will be advisable to extend it to a considerable length so far as to open at the side of the hill, or declivity, or into a well. An air trap should likewise be formed in the drain, by sinking the latter so much lower in that opening, as it is high, and by fixing a partition from the top for the depth of an inch or two into the water of the drain, by which means the air will be completely excluded from the well. A sufficient number of brick piers must now be formed in the sides of the ice-house for the support of a cart-wheel, which should be laid with its convex side upwards, for the purpose of receiv-

ICE

ing the ice; and which ought to be covered with hurdles and straw to afford a drain for the melted ice.

The sides and dome of the cone should be about nine inches thick, the former being constructed of brick-work without mortar, and the bricks placed at right angles, to the face of the work. The vacant space behind, should be filled up with gravel or loose stones, in order that the water oozing through the sides, may the more easily be conducted into the well. The doors of the ice-house should be made to shut closely, and bundles of straw put before them, more effectually to exclude the air.

The ice to be put in should be collected during the frost, broken into small pieces, and rammed down hard in strata, of not more than a foot, in order to make it one complete body. The care in putting it in, and ramming it down, tends much to its preservation. In a season when ice cannot be had, snow may be substituted.

ICE-PLANT, FIG MARIGOLD, EGYPTIAN KALI, or *Mesembryanthemum*, a genus of plants comprising eighty-six species; one a native of Egypt; two or three of Australasia, the rest of the Cape. They may be subdivided into those without a stem—with a very short stem—with a stem and flat leaves, or none—with a stem, the leaves convex underneath—with a stem, the leaves cylindric—with a stem, the leaves three-sided.

Of this extensive tribe we can only notice the *mesembryanthemum*, with taper, obtuse, hairy leaves, placed alternately, called the Egyptian kali; and the *mesembryanthemum*, with oval, obtuse, waved leaves, placed alternately, commonly called the diamond ficoides, diamond plant, or ice-plant. Both these are annual plants, the first grows naturally in Egypt, and does not perfect its seed in this country: the second sort is a native of the Cape of Good Hope, and is propagated for the singularity of its leaves and stalks, which are closely covered all over with a multiplicity of pellucid gems, or

ICHI

pimples, full of moisture, which when the sun shines on them, reflect the light, and appear like small bubbles of ice, or a bed of diamonds, whence its name. This species is best propagated by seeds, which must be sown in a hot-bed, early in the spring; when the plants appear, they should be removed to a fresh hot-bed to quicken their growth; and, when large enough, they may be planted in pots, and plunged in a tan-bed. About the end of June, they may be inured to the open air, and afterwards turned out of the pots, and planted in warm borders.

Many of the other species, which we cannot enumerate, have beautiful flowers, which appear at different seasons of the year; some flowering early in the spring, some in the autumn, and some even in winter. Others are perennials, and easily propagated by cuttings; but require care and moderate warmth.

ICHNEUMON, a species of the genus of animals called **VIVERRA**, which see.

ICHNEUMON, in entomology, a genus consisting of five hundred and ten distinct species, inhabitants of different parts of the globe; of which seventy are indigenous to our own country. The whole of this singular genus are parasitical, deriving their nourishment from other insects. The fly feeds on the nectar of flowers, and when about to lay her eggs, perforates the body of some other insect, or its caterpillar, with its sting or instrument at the end of the abdomen, and there deposits them. These, after being transformed into *larvæ*, prey upon the intestines of their foster-parent, till they are again metamorphosed into pupæ. The following, which usually inhabits Persia, we select as a general example of this genus.

The *seductor*: black; scutell yellow; tip and petiole of the abdomen and crenate band, yellow; legs mostly yellow. Forms a nest of cemented clay, in chimneys and windows, divided into cylindrical cells, in each of which is contained a cylindrical, brown, vivid,

pellicle, and in this the larva, with the carcase of a spider, in which the insect had deposited her eggs.

ICHOR, a thin, aqueous, and acrid discharge.

• *Ictrus*. See **JAUNDICE**.

ICHTHYOLOGY, the natural history of fishes : constituting the fourth division of the Linnean system of zoology.

IDEA, the image or resemblance of a thing which, though not seen, is conceived by the mind. *All our ideas are acquired by experience* ; this, when employed about external sensible objects, may be called *sensation* ; by this we have the ideas of bitter, sweet, yellow, hard, &c., because conveyed to the mind by the external senses ; the same experience, when employed about the internal operations of the mind, perceived and reflected on by us, may be called *reflection* ; hence we have the ideas of perception, doubting, willing, comparing, &c. By these means it will be found we receive our whole stock of ideas ; and that we have nothing in our minds which did not come to us in one of these two ways. This being, therefore, the origin of our thoughts, the importance of surrounding the child with such a concurrence of circumstances, as shall induce good ideas, and virtuous thoughts and actions, cannot be too strongly insisted upon : for the mind of the child will, and must be, the reflection of those objects, ideas, thoughts, &c., (often modified of course, more or less, by his natural capacity,) by which he is immediately surrounded, and on which the conduct of his future life will intimately depend. See **CAPACITY**, **CIRCUMSTANCES**, **EDUCATION**, and **MIND**.

IDIOCY, a deficiency of understanding, so great, that in criminal cases, idiots, as well as lunatics, are not chargeable for their own acts, if committed when under these incapacities. Nor can a matrimonial contract take place in a state of idiocy. Idiots, and persons of non-sane memory, are not totally disabled either to convey or purchase property, but conditionally

only : their conveyances and purchases being voidable, but not absolutely void. Idiocy is, however, a very indefinite term.

Idiosyncrasy. See **CONSTITUTION**.

Illness. See **EMPLOYMENT**.

IGNUS FATUUS, a meteor, said to be chiefly seen in dark nights, about meadows, marshes, and other moist places, as also in burying-grounds, and near dung-hills. It is known among the common people by the name of Jack in the lantern, or Will with a wisp. The existence of such a phenomenon was questioned by the late Dr. **DARWIN** ; we think, however, there is no just ground for questioning its appearance, having seen something very similar to it. The cause, no doubt, arises simply from the ignition of carburetted hydrogen. See **CARBURETTED HYDROGEN**.

IGNITION, denotes, not merely the action of setting on fire, but, in chemistry, the state of a body when raised to a red heat, whether accompanied with or without flame.

IGNORANCE, OF THE LAW, is, amongst lawyers and legislators, no excuse for an infraction of the law ; but, surely, common sense demands that the laws should be individually known to every member of the community, by something more than implication. And the benevolent legislator will take every means in his power, to dispel ignorance of every kind from the community for which he legislates, well knowing that ignorance is the fruitful parent of immorality and of crime.

ILIAC PASSION, a kind of colic, and one of the most dangerous diseases with which mankind is afflicted. In this complaint, the motion of the bowels is totally inverted, and it is usually accompanied with vomiting. It generally arises from spasms, or obstructions in the alimentary canal by which the passage or descent of the excrements is impeded. An unnatural structure of the intestines, a rupture, violent exertions of the body, such as running, leaping, or riding, eating unripe fruits, flatulent and indigestible food, are the more common causes of

this dangerous, and sometimes fatal disorder. What is said under the articles **COLIC**, and **INFLAMMATION** of the **BOWELS**, should be carefully attended to : but no person who can obtain the aid of an experienced medical attendant, should trust to his own judgment in this disease.

ILIUM, in anatomy, the haunch bone. See **HIP JOINT**.

Illustration. See **CARBURETTED HYDROGEN**, and **LAMP**.

IMAGINATION, a complex operation of the mind, in which we combine a variety of ideas, and exhibit them either in oral or written language, in a new, great, and extraordinary manner. The exemplification of the imagination is not, however, confined to speech and writing ; it is often demonstrated in extraordinary actions, the effect of some previous process of the mind.

None of the mental faculties exhibit such interesting and diversified phenomena as the imagination : restrained within proper limits it is of great service, and affords the most exalted pleasure ; but when no longer under the guidance of reason, the imagination is often a tyrant, leading misery, disease, or death, in its train. Hence the necessity of a strict guard at all times, over this ideal personage. See **AMBITION**, and **GENIUS**.

IMITATIVE, a term implying a disposition to copy or imitate : it is applied with peculiar emphasis to man, who is the most imitative of all animated beings, and upon whom, from his peculiar powers and disposition for imitation, the force of instruction and example acts with a great and controlling energy, so as to form, by their united influence on the human mind, according to circumstances, a good and virtuous, or a bad and vicious individual.

Impatient. See **BALSAM**.

IMPLEMENTS of *Husbandry*, denote those instruments or machines which are used in the different branches of rural or domestic economy : such as ploughs, harrows, hoes, churns, threshing machines, &c. For a particular description of each see, generally, the

several articles in the order of the alphabet. See also **BUTTER**, **CHEESE**, and **HUSBANDRY**.

IMPOSTHUME, an abscess of any kind ; it has, however, been occasionally applied only to those abscesses which occur in the interior parts of the human body, such as the lungs, stomach, &c. The treatment of an imposthume must, of course, depend upon its situation, and the part affected. • See **ABSCESS**.

IMPONDERABLE SUBSTANCES, are those which are either really or apparently without weight ; or at least whose weight we have no means at present of ascertaining : such are caloric, the electric fluid, and light.

IMPOTENCY, or *Anaphrodisia*, a disease or defect in the male subject of the human race, whereby he is disabled from performing the act necessary for the propagation of the species.

The cure or removal of this complaint must depend upon its cause. The most common of which is, immoderate indulgence in the sexual gratification, or the practice of masturbation in youth. In some cases the *mind* is more in fault than the bodily functions. But whatever be the cause, *moderation* in, or even a total abstinence for a time at least, from the use of the sexual functions, together with due regulation of the diet, and a proper control over the mind, promise the most effectual remedy for this complaint. Stimulant medicines have, it is true, been occasionally administered, but their exhibition is by no means accompanied with durable and good effects ; their use has often led to injurious consequences.

Imprisonment. See **PRISON**.

IMPRISONMENT, •**FALSE**, is the detention of the person unlawfully, whether it be in a common prison, in a private house, in the stocks, or even by forcibly detaining one in the street. Persons falsely imprisoned, will be set at liberty, upon application to the proper quarter for that purpose. And those who are guilty of such false imprisonment are liable to pay damages to the injured party for the same.

INC

Inarching. See GRAFTING.

INCH, a measure of length, the twelfth part of a foot : supposed equal to three grains of barley, laid end to end.

INCONTINENCE, of URINE, or an involuntary flux of urine, is a complaint which frequently affects children, otherwise healthy, when asleep, and is extremely disagreeable. It is often the effect of laziness, and may be prevented by proper domestic management and correction. But it sometimes proceeds from a weakness of the sphincter of the bladder ; and in all cases care should be taken to distinguish between such voluntary and involuntary discharge, or reproof may become cruelty and unkindness. Many ridiculous nostrums have been proposed for this complaint. Tonics are indicated and recommended ; but a blister applied to the os sacrum has often cured it. It sometimes ceases spontaneously ; at other times it is obstinate, and not to be subdued, at least by medicine.

In the *incontinence of the urine of HORSES*, small doses of tincture of cantharides have been given with advantage, and blistering the loins and rump, is said to be efficacious.

INCUBATION, in ornithology, that period during which the hen sits upon her eggs in order to produce the chicken. As in gestation there is a general period to which every animal of the same species most commonly conforms, yet this general period cannot always be relied on, the exceptions being numerous, and so well authenticated as to place this conclusion beyond the possibility of doubt ; so, in incubation, the periods of the same animals, of the same species, vary in a similar way.

Thus several turkeys having set on the eggs of hens, the duration of the sitting was from 17 to 27 days ; the same on duck's eggs 27 days ; the same on turkey's eggs from 26 to 29 days.

Hens sat on ducks' eggs from 26 to 34 days ; on those of their own species from 19 to 24 days.

INC

In ducks the duration of sitting was from 28 to 32 days.

In common geese from 29 to 33 days.

In pigeons from 17 to 20 days.

INCUBUS, NIGHT-MARE, or *oneirodynia*, a complaint with which most persons are more or less acquainted ; the symptoms are, however, exceedingly various. It most commonly occurs while the patient is asleep, and in this state, more usually, when he lies on his back ; although we knew a patient very much tormented with it when lying prone, and who did so to endeavour to avoid its attacks. Persons who are affected with this disorder, seem to have a weight on their breasts, and about the præcordia. Sometimes they fancy that they see spectres threatening them with suffocation ; and with the fright and struggling generally awake ; but the uneasiness does not immediately go off ; and the illusion often partially continues for some time afterwards. It is said, but we have not known an instance of it, that the disease has proved mortal.

A still higher degree of this complaint, is **SOMNAMBULISM**. See that article. The cause of this complaint is, no doubt, principally seated in the stomach ; and most commonly it originates from flatulent and indigestible food ; or at least food taken very shortly before going to bed ; for it may be, in general, cured by eating very light suppers, or none whatever ; which last is the better practice, and avoiding also all fermented liquors. If the patient be troubled with dyspepsia, or with costiveness, an attention to these will most probably remedy the mischief. Antispasmodic medicines and chalybeates, may be occasionally of service, but attention to food and drink, and the general health, promise the most effectual relief.

Indian Arrow-Root. See ARROW ROOT.

—— **Berry.** See COCCULUS INDICUS.

—— **Corn.** See MAIZE.

—— **Fig.** See CACTUS.

—— **Grass.** See SHARK.

INDIAN RUBBER

Indian Mallow. See *SIDA*.

—— *Oak.* See *TEAK*.

—— *Pink.* See *WORM-GRASS*.

INDIAN REED, or *Canna*, a genus of plants comprehending five species, the chief of which is the *India*, or Common broad-leaved flowering cane, indigenous to the climates between the tropics in Asia, Africa, and America, comprising four varieties; flowers reddish—inner petals erect, and scarlet—inner petals reflected, scarlet. The *angustifolia*, is common to the tropical parts of America;—the *glauca* is a Carolina plant, with large, pale yellow flowers;—and the *juncea* is a native of China; the corol small dull, rufous.

INDIAN RUBBER, ELASTIC GUM, or *Caoutchouc*, is the produce, chiefly, of the *Siphonia*, or Elastic Gum Tree, a genus having one species, the *siphonia elastica*. It is found between the tropics in South America, and also on that continent as far as 40 degrees of south latitude, so that it has been conjectured that it would thrive in France and Spain. This tree grows in Brazil to the height of fifty or sixty feet; generally straight, and free from branches, excepting at the top, where they are numerous and much divided; its leaves are green on the superior surface, and white beneath, growing three together on the same leaf-stalk. The seeds are contained in pods, each consisting of three cells, resembling the *vicinus*, or castor-oil berries.

The common method of extracting the gum from this tree is either by incision or by cutting off whole branches. The first method is usually adopted: it consists in cutting several deep gashes through the bark, and placing shells round the tree in any convenient manner, to receive the gum, which is formed into the bottles as commonly seen in this country, by fixing a ball of clay on the extremity of a stick, and repeatedly dipping it into the extracted fluid. Each coating requires a short time to dry and harden by exposure to the sun and air; several such coatings produce the required thickness; after which the stick is withdrawn, and the clay is

broken and washed out. The thick blocks are made in moulds.

The trees or vines producing caoutchouc are, however, numerous, and not confined to one species nor to one continent, but principally to tropical climates. Many are of the genus *Euphorbia*. Those found in Bengal, near the mouths of the Ganges, mostly resemble the English ivy. The largest stems are from four to six inches in diameter, proceeding in numerous ramifications on the ground, until they meet with other support, when they ascend, and frequently bind several trees together in the numerous folds of their branches, then descend, and again take root in the ground. Trees producing caoutchouc grow also in Africa. Indeed, the bird-lime obtained in this country from holly bark is of a similar nature. The liquid juice, or gum, cannot be imported in its liquid state, in consequence of a spontaneous fermentation which would take place, and ultimately spoil it.

Indian rubber is in its natural qualities closely allied to gluten; it is insoluble in water, and in alcohol, but it is soluble in sulphuric and nitric ether, and oil of turpentine. When heated it softens, and is in that state soluble in some of the fixed oils. It is said to dissolve easily in cajeput oil. It is highly inflammable, burning with a bright flame, which throws off charcoal. When reduced to a fluid, either by melting or by solution, it is not easily restored to a solid form, and most of its original properties are lost, excepting when nitric ether is employed, which completely dissolves it, at the common temperature of the atmosphere; if the solution be spread on clay, paper, &c. the ether evaporates, and leaves it unaltered. But as ether is an expensive solvent, oil of turpentine, with the application of a small degree of heat, is most commonly used. If pieces of paper, silk, or cotton cloths, previously saturated with linseed oil, and dried, be immersed in this solution, and afterwards exposed to the air, the turpentine evaporates, leaving the oil-case completely covered

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with the caoutchouc, and possessing a remarkable degree of adhesiveness and tenacity: so that if two or more pieces be laid over each other, and pressed together so as to expel the air between them, they will unite with great firmness. Pieces of silk, cotton, or paper oil-case may thus be joined together of any size and shape, forming a resemblance to paste-board, flexible, and impervious to air. Compositions for covering air-balloons are made of this gum, by digesting it in oil of turpentine, and afterwards dissolving it by boiling in drying linseed oil in various proportions.

Indian rubber is applied to various purposes in the arts. It is known to every one as an excellent substance for removing the stains of black lead from paper, parchment, &c. It is also used for the manufacture of catheters, bougies, syringes, pessaries, &c. And it has also been strongly recommended for rendering elastic beds and pillows, life-preservers, &c. air and water-proof. But the most effectual method of converting this gum to all such purposes is, evidently, to manufacture the various articles with it in its natural fluid state, in the country where it is abundantly produced, unless some method could be found of importing it in such state: a desideratum certainly of very great importance.

INDICTMENT, a written accusation by one or more persons, for a crime or misdemeanor committed by some other person or persons, preferred to, and presented on oath before, a grand jury. An indictment may be found on the oath of one witness only, unless it be for high-treason, which requires two witnesses.

Indigestion. See **APPETITE** and **DYSPEPSIA**.

INDIGO, a well-known deep blue substance, obtained from the next article, which see.

Indigo contains about 50 *per cent.* of pure colouring matter, which is perfectly insoluble in water, and, when heated, sublimes in the form of a blue smoke, which, upon condensation, forms

acicular crystals. It is soluble in concentrated sulphuric acid. This solution is usually called *liquid blue*, and is used as a substantive colour for dyeing cloth and silk. Substances which powerfully attract oxygen render indigo green, and by exposure to air it again acquires a blue colour. In this green state indigo is soluble in the alkalis, and the solution is commonly employed for dyeing calico. See **DYEING**.

Indigo is used for various purposes in the arts, for water colours, but chiefly as a dye.

Indigo is found in commerce of various kinds: the flora, a South-American production, the East India and Carolina indigo, all of which are subdivided into various names and qualities. The principal criterion of the goodness of indigo is, if, when cut with a knife, it exhibit a reddish copper-like appearance. Where this shade is not, or only very slight, the indigo is of inferior value.

INDIGOFERA, or indigo bearing plant, a genus consisting of fifty-one species, chiefly natives of the Cape and India. The most important of the whole is

The *Tinctoria*, or common indigo plant, a native of the East Indies, with pinnate leaves in four pairs, oblong, glabrous, and a shrubby stem. The plant requires a rich and rather moist soil, well and deeply dug. The seed, resembling grains of gunpowder, are sown in little furrows about the breadth of the hoe, at the depth of two or three inches, in a straight line and a foot asunder. It is usually sown in the spring. The seed comes up in three or four days, and the whole plant is ripe in about two months. When it begins to flower it is cut with pruning knives; and the operation is repeated about six weeks afterwards in cool weather. It is rarely suffered to continue more than two years. It will thrive in most warm and tropical climates.

Indigo is prepared from the leaves of the small branches. The leaves when cut down are thrown into large vats of water, where they are suffered to remain till a

considerable fermentation ensues, and the water progressively acquires a violet colour. This happens in about sixteen or eighteen hours from the commencement of the infusion, at which time the water is conveyed by means of cocks at the bottom of the vat into another vessel, in which it is constantly agitated by a kind of churn till it becomes frothy all over the surface, and every part is intimately blended. It is then allowed to settle, and the superincumbent water being drawn off, the indigo remains at the bottom of the vessel, like a sediment or feculence. Indigo exists in some of our native plants. See **WOOD**.

INDIVIDUAL PROPERTY, that wealth which every individual retains and disposes of at his own will and pleasure, and which, consistent with the laws, he may by his own industry, talent, genius, ingenuity, or other means, be able to obtain. Individual property, except for the exigencies of the state and the general welfare, has, in every civilized community in the world, been held more or less sacred; and with good reason, for few persons would be disposed individually to exert themselves in providing for their own exigencies, or that of their families and the future, if they were not protected in the enjoyment of that which they have laboured to acquire. It is not, however, difficult to conceive situations and states, where the operation of this general custom, which seems to have been adopted not only by nations, but by common consent of the whole world, might, from a peculiar accumulation of property, arrive at such an excess as to be manifestly injurious to a great portion of the people of a state. Whether the British empire have arrived at such a point we shall not here inquire; but we think it is quite evident that, without great exertion and extensive benevolence on the part of those persons possessing wealth in Great Britain, the prospect of the comforts, or even conveniences, of life, for a great body of the people, is at an immeasurable distance.

INDUSTRY, diligent assiduity. See **DISPATCH**, and **EMPLOYMENT**.

INDUSTRY, HOUSES OF, are buildings erected in various parts of England, in order to maintain the sick, infirm, and aged poor. The Shrewsbury House of Industry has been held up as a pattern for imitation by those persons who have advocated that system which houses of industry are calculated to promote.

One of the best plans which we have seen for such establishments is, that proposed by Mr. OWEN, of New Lanark, in Scotland. This plan includes not only the mechanical and useful arts, the loom, &c. but also combines gardening and agriculture, and a course of moral and systematic instruction for the rising generation. No other plan has yet been devised, which defrays within itself the whole of the expenses of its establishment; Mr. Owen asserts that, on his plan, the establishment, when once in activity, will not only defray all its expenses, but produce a surplus profit.

INFANCY, the first stage of life. The period of infancy has been differently stated by different writers. Some restrict it to the time which intervenes between the birth of the child, and that in which it can express its wants by speech; others prolong it to the seventh year. Infancy is, however, the most critical period of human existence; childhood, which is that period between infancy and the age of puberty, is naturally the most healthy. In infancy the foundation of a good or a bad constitution is generally laid; one half of the human race die before either is established.

We shall here consider infancy and childhood under one head. As soon as the infant is born, the mucus with which its body is covered, should be removed by purified soap and water, made sufficiently warm to be agreeable. After examination, to ascertain whether it possesses any accidental injury or natural imperfection, the naval string should be loosely folded in a dry rag, the head and body loosely dressed, and the growth and future formation left to nature.

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The diseases of infants and children, except such as are contagious or epidemic, may in general be referred to the mismanagement of those who have the care of them. Healthy women will naturally bring forth healthy children, unless they are inattentive to themselves during pregnancy; the vigour, therefore, of the constitution of the child will, in great measure, depend upon the constitution of the mother.

From the peculiar circumstances in which mothers are placed with respect to their children, they have advantages relative to a knowledge of the probable cause of sickness and mortality of their children, which no other person can possibly possess. The prevention of disease is therefore an object deserving their peculiar care. Indeed, there are few mothers in the well-informed classes of society, who are not competent to assume the office of physician to their own offspring in numerous instances, and especially in all those rapid fluctuations of health so peculiar to infancy and to childhood. The study of the diseases of infants ought to form a part of the education of every female, or at least every female who is likely to become a mother. The first sensations of infants are necessarily those of mere pleasure and pain; when of the former, they enjoy them in silence; when of the latter, they express them in their own language, that is, by crying, and demand relief; and it should be indelibly impressed upon the mind of both mother and nurse, that infants seldom if ever cry unless they suffer some inconvenience or pain: whenever, therefore, infants cry, the cause of such crying should be at once diligently sought for; if it does not require food its clothes may incommode it, it has been kept or lain too long in one position, or it requires rest, &c. Nothing is more absurd than dosing the infant with medicine of any kind immediately on its entrance into the world. It is of importance to know, that in this early stage of infancy, drugs are wholly unnecessary, and often very improper. The first milk of the mother,

which the child should be placed at the breast to obtain as soon as she has recovered by rest from the immediate fatigue of her labour, or a little thin gruel, with a small quantity of soft sugar, being all that is necessary to promote those evacuations which nature herself in general, most faithfully ejects. The early application of the infant to the breast will besides cause the milk to be much sooner supplied, and more certainly prevent puerperal fever, and inflammations of the breast, than any other method which can be adopted.

The health of women, while suckling their infants is, in general, better than at any other period of their lives. But should, from any cause whatever, their functions be disturbed, the quantity or quality of the milk, or both, will be often very materially affected. The quality of the food and drink taken by the mother, will also very materially affect her child, so also will medicine. Thus if a nurse eat garlic, her milk will become impregnated with it, and disagreeable. If she indulge too freely in wine or porter, the infant will become sick; and if a nurse take jalap, or any other opening medicine, the infant will be purged; and such as are affected with gripes, or pains in the bowels, are often cured by giving the nurse a larger proportion of animal food. The milk of a suckling woman may also be altered by the affections of the mind, such as anger, fear, grief, or anxiety. In mothers as well as nurses, a good temper, and an even mind, are grand requisites in promoting the health of the child. The food of nurses should not be different from their ordinary food, but they, in general, eat and drink considerably more, and with greater relish, than at other times, which, of course, should not be denied to them.

During the first month, the infant, should, if possible, receive its nourishment from its mother's breast, not only as being beneficial to the infant, but also, by its discharge, to the mother herself. If, however, from peculiar circumstances, the mother cannot suckle her own child, a young woman should

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be chosen to do so whose milk is nearly of the same age as that of the mother. But no trifling consideration ought to induce any mother to abandon her offspring to be suckled by another, provided she has health and strength to do it herself.

An infant should be early accustomed to feeding, as it will thereby suffer less inconvenience on being weaned. It should be fed two or three times a day, and, if not suckled during the night, which some medical writers think is not necessary, it may require feeding once or twice during that period. We cannot, however, avoid remarking, that suckling during the night, at least for the first two or three months, is preferable to feeding. An infant in health, and which has been brought to feed regularly, may be safely, and is best weaned at seven or eight months. It should seldom, if ever, be suckled more than ten. The period of weaning, however, must be regulated by the strength of the mother, as well as that of the infant. It should never be taken from the breast, if possible, before the end of the fourth month.

Should an infant from accidental, or other circumstances, be deprived of its food from the breast of its mother, or nurse, a substitute for it must be supplied, and the closer we can imitate nature the better. For this purpose, a sucking bottle should be procured, the mouth of which should be as wide as that of an eight-ounce phial, which is to be stopped with sponge covered with gauze, and made in size and shape to resemble a nipple. The following preparation is most suitable, as it comes nearest to the mother's milk, and may be sucked through the sponge.

On a small quantity of a crumb of bread, pour some boiling water; after soaking for about ten minutes, press it and throw away the water: the bread, by this process being purified from alum, or other saline substances which it might contain; then boil it in as much soft water as will dissolve the bread, and make a decoction of the consistency of barley-water; to a sufficient

quantity of this decoction, about a fifth part of fresh cows' milk is to be added, and sweetened with the best soft sugar.

After each feeding the bottle and sponge should be carefully rinsed with warm water.

As the infant advances in growth, the proportion of milk is to be increased, and that of the sugar lessened, until the stomach is able to digest simple bread and milk, Indian arrow-root, &c. In this way very fine children have been reared.

As the child grows up it will require food of a more solid nature: broths and soups are not so nutritious as solid animal food. But, however, a variety of food is best; and food for infants and children in health should be considerably more of a vegetable than of an animal kind.

The utility of air and exercise for infants and children, cannot be too much insisted upon. The perpetual motions of children, which carry even the appearance of restlessness, are the best indications of that activity which nature, at such age, imperiously demands.

Infants require a large proportion of sleep, in which they ought to be indulged; indeed, for some weeks after their birth, sleep and food appear to be almost the only things which they want.

Immersing infants daily in tepid or warm water, is conducive both to their growth, and bodily strength; but the practice of plunging them into cold water, is highly improper, and should be avoided by every one who desires to see them lively, healthy, and vigorous.

It may seem almost superfluous, in this enlightened age, to speak of the dress of infants: but, however, it is our duty to remark, that all tight bandages of every kind should be carefully avoided. The head should be lightly covered; and a roller about six or seven inches broad, and as elastic as possible, at the same time that it is soft and smooth, should form the principal envelope of the body. No pins of any kind should be used about an infant's dress. In the summer season infants need not wear stockings, but in cold weather

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they require them ; they should be of wool. If very young children be carried abroad, they should, of course, be shielded from the immediate contact of strong light, and cold air. At the same time, it should be remembered that keeping children too hot is as mischievous as the opposite extreme.

One of the most common *Diseases of Children* is *colic*, arising sometimes from the retention of the meconium, in very young children, but more usually from the milk of the mother being unsuitable for it, or from improper food. Various nostrums are given by nurses for this complaint. In general, however, the colic or gripes, as well as *diarrhœa* in children, if not of long continuance, will be best removed, when medicine is necessary, by a few grains of powdered rhubarb and magnesia, according to the age of the child : they may be mixed together with half an ounce of pure water, sweetened with a little sugar, and given for one dose. If the diarrhœa manifestly weakens the child, small doses of white poppy syrup may be added to the *chalk mixture*, see *CHALK*, and given according to circumstances, a tea-spoonful or more at a time. In the retention of the meconium, a tea-spoonful or more of castor-oil, is the best remedy.

The *Red gum*, requires no medical treatment whatever ; care must, however, be taken not to reperi the eruption by exposing the child to cold, or by washing in cold water, &c. The *white gum* and *tooth-rash*, are of the same nature, and require no medical attention.

Children are sometimes affected with an *erysipelatous* affection of the navel, and neighbouring parts. If it be severe, an emollient poultice should be applied to the part ; or a rag dipped in camphorated spirit of wine may be applied to the navel, to be kept constantly moist ; the surrounding inflammation should be simply powdered with fine starch every eight hours. The bowels should, in the mean time, be opened with castor-oil, or with small doses of rhubarb and calomel.

The *Nettle-rash*, simply requires

two or three doses of opening medicine, and the avoiding of cold, or any other repellants.

The *Purples*, principally attack the children of the poor. A decoction of bark, with acidulated drinks, pure air, and moderate exercise, with an occasional purgative, are the only remedies necessary.

The *Itch*, in very young children, may be generally cured by the nurses paying attention to her own personal cleanliness, and by bathing or washing the child daily, in warm water. Should the complaint become inveterate, by inattention to this mode of cure, and the nurse herself be affected, she should sponge her body, and every part affected, daily, with a warm solution of the liver of sulphur, made by dissolving one drachm of this medicine in a quart of water. A table spoonful of the following mixture should also be taken by the nurse three times a day. Dissolve one ounce of Epsom salts in half a pint of peppermint-water, to which add a drachm of the dilute sulphuric acid, and two drachms of the compound spirit of lavender. The child should also be sponged with some of the sulphur solution, lowered with warm water, to half the strength, and may take a tea-spoonful of the above mixture, twice or three times a day. This treatment will soon cure both the nurse and the child.

Scaly eruptions of the skin, are sometimes very troublesome, and difficult of cure. In this disease, the liver is occasionally affected ; this is known by clay-colour evacuations : one scruple of antimonial powder, ten grains of calomel, and two scruples of rhubarb mixed together, divided into ten equal parts, one of which to be taken every night, using the *steam bath*, if convenient, every morning, promise the best cure.

The *dry tetter*, attacks principally the face, and may be removed when recent, by warm, fresh-water bathing ; but when troublesome, the preceding powders should be taken, always remembering that cleanliness, in all the stages of this complaint, should be particularly attended to.

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The *white blister, eating-hive, or burnt-holes*, appears for the most part behind the ears, but sometimes on other parts of the body. The blisters terminate in deep ulcers, with a copious discharge, and a rapid tendency to mortification. The parts affected should be barked twice a day in warm water, and dressed with figwort-ointment, (see FIGWORT) and the bowels kept moderately open, by occasional doses of rhubarb and calomel. Should there be a tendency to mortification, the parts should be fomented with the steam of hot water, and a carrot poultice applied every eight hours, and a table-spoonful of the following mixture taken three or four times a day : Take of decoction of bark four ounces ; dilute sulphuric acid, twenty drops ; of syrup of orange-peel, half an ounce—mix. From a dessert to a table-spoonful may be given to a child from three to five years old, four or five times a day.

Almost all the diseases of the skin of infants, however different they may be, will, in the commencement, yield to a judicious and free use of warm water, and proper attention to cleanliness ; in such cases, we only second the operations of nature---the safest and the best physician.

Convulsions are the concomitant of many complaints of the stomach and bowels ; in curing them regard must of course be had to the primary disorder. They take place in eruptive fevers, hydrocephalus, and teething, to which, therefore, we refer, and also to **CONVULSIONS**.

The *thrush* is a very common complaint of young children. It arises, in general, from some acrimonious matter, or derangement in the alimentary canal. The cure is effected by first emptying the stomach and bowels with the following medicine : Dissolve one ounce of manna, and two drachms of antimonial wine, in two ounces of water ; give a table-spoonful of this mixture every two or three hours, till it vomits and purges. The best topical application is the following : Take of powdered borax and tincture of myrrh,

of each one drachm ; honey one ounce. Mix a little of it. It must be applied with a feather to the mouth, three or four times a day. During the cure, the bowels must be kept open with magnesia, or castor-oil ; a gentle moisture should also be encouraged on the skin. This may be done by giving a little wine-whey to the infant, or to the nurse, if the infant be at the breast. We give this method of cure ; but the thrush often passes off without any medicine whatever, except, perhaps, a laxative.

We have treated of *croup* in the order of the alphabet, but as we would not willingly omit any thing which may contribute to the removal of this too fatal disorder, we add here that calomel has, in some late cases of the croup, in young children, been employed with great success. It should be given as soon as possible after the attack, in doses of two grains, every four hours, until the severity of the complaint declines. At the same time, an ointment made of five grains of emetic tartar, five grains of powdered opium, and a drachm of spermaceti ceate, should be applied to the breast, until pustular eruptions are excited on the skin. See **CROUP**.

Infants and children are subject to *cough*, when the chest is not affected, proceeding from other causes, such as affections of the stomach and bowels, teething, worms, &c. which may be cured by removing the cause ; but the common catarrhal cough may be removed, after opening the bowels by castor-oil, or other gentle purgatives, by giving two or three grains of antimonial powder at bed-time. A waistcoat of chamois leather, with sleeves, to shield the child against cold, and to be worn next the skin, has been, sometimes, useful in affections of this kind. When the cough is troublesome, a tea-spoonful of the following mixture may be given : Take of simple syrup two ounces ; of antimonial wine, and compound tincture of camphor, of each one drachm ; tincture of tolu, twelve drops—mix. The diet should be chiefly vegetable. A little gum Arabic th-

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solved in the child's drink may assist in allaying the cough.

It is scarcely necessary to add, that in all violent and dangerous diseases of children, a medical practitioner ought to be consulted. The diseases of infants and children which we have not here noticed, such as COW-POX, SMALL-POX, MEASLES, &c. &c. will be found under their proper heads, in the order of the alphabet.

It now only remains to make a few remarks on the moral management of children.

The scriptures teach us to train up a child in the way that he should go, and when he is old he will not depart from it. Such, indeed, is the force of first impressions upon the infantine intellects, that we think a period could be found in the life of almost every individual when he thought his father the wisest man in the world! In the education, therefore, of the infant mind, what advantage might not be taken of such susceptibility; what care and attention are not requisite, what responsibility does there not lie with parents and others having the care of children, to impress their minds with those ideas, to surround them with those circumstances, which are necessary to enable them "to run the great career of justice." Above all, it should be remembered that precepts, however numerous, are weak against the force of bad example and the concurrence of surrounding circumstances; and that if we wish our children to become virtuous, it is first of all of essential importance that we should be virtuous ourselves. See **EDUCATION**.

For the treatment of infants born apparently dead, see **PARTURITION**.

INFECTION, a term very similar to contagion, implying the communication of disease by actual contact, by effluvia, or by insertion of the virus beneath the scarf skin. See **CONTAGION**, **PLAGUE**, **SMALL POX**, **TYPHUS**, &c.

INFERNAL STONE, a term applied to two caustic substances, composed of very different ingredients. One

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a solution of silver in the nitric acid, *nitrate of silver*; the other is pure potash, called also *fused potash*; they are both commonly kept in the shops in small rolls. See **POTASH** and **SILVER**.

INFIRMARY, a kind of hospital into which persons who labour under diseases, or who are accidentally injured, are received to be cured. See **HOSPITAL**.

INFLAMMATION, in chemistry, the burning of a body, attended with the emission or production of flame. For spontaneous inflammation, &c. See **COMBUSTION**. See also **ELECTRICITY**, **FLAME**, **GALVANISM**, **HEAT**, &c.

INFLAMMATION, in medicine, a general state of the bodily functions, attended with more or less preternatural heat, redness of the face, dry tongue, thirst, an increase either in the number of the pulsations of the heart and arteries, or in their fulness and tension, &c.: such a state of the living body is also denominated *inflammatory fever*. It may proceed from various causes: from the affection of a particular part, such as of the lungs, or of the bowels, &c. being propagated over the whole system; or it may originate from some unknown cause where the general tendency of the whole system is to put on the inflammatory diathesis. Or it may originate from some virus introduced into the system, such as the measles, small-pox, &c. In a word, inflammation consists in an excess of the excitement, more or less, of all the living powers.

The removal of diseases of this order consists in *reducing the excitement*, by bleeding, purging, an abstinence from the ordinary, and a sparing use of the least stimulant, kind of food; in draughts of cold water, and currents of cold air, with rest, quiet, and an abstraction of the ordinary mental and corporeal stimuli, &c. &c.

INFLAMMATION is also applied to various local diseases on the surface of the body: it is known by heat, redness, pain, and swelling. It is also distinguished into phlegmonous inflammation, of a bright red colour; the swelling more or less pointed and throb-

bing, tending to suppuration. And into erysipelatous, or erythematous, being an inflammation of a dull red colour, vanishing upon pressure, spreading unequally with a burning pain and tumour, sometimes scarcely perceptible; ending in desquamation, or vesicles of the skin. The first kind is such as the common boil, an abscess, &c. The last is most strikingly exemplified in erysipelas, or St. Anthony's fire.

For the detail of the cure of general, as well as local inflammatory diseases, see the several articles, *BOWELS, Inflammation of*; *BRAIN, inflammation of*; *CATARRH. ERYSIPELAS, FEVER, LUNGS, inflammation of*; *ABSCCESS, BOIL, BRUISES, CARBUNCLE, &c. &c.* throughout our work.

Inflammatory diseases. See the preceding article.

INFLAMMATION, internal, of horses, is usually confined to the contents, or some part of the contents of one of the cavities of the body, either the skull, the thorax, the abdomen, or pelvis. It is always highly dangerous, and requires immediate attention. Bleeding, purging, and evacuations, with a sparing diet, are the general indications of cure. See *BLADDER, BLEYME, BOWELS, &c.*

INFLAMMATION, external, of horses, is generally produced by wounds, bruises, strains, or other accidents. It sometimes arises, however, from a general fulness of the vessels, from over-feeding, and insufficient exercise; it sometimes also arises from unknown causes. The usual remedies are bleeding, local or general, opening and cooling medicines, or diuretics, fomentations, cold lotions, &c. See *BRUISES, GREASE, WOUNDS, &c.*

INFLUENZA, in medicine, a species of catarrh, which sometimes affects a whole city.

INFLUENZA, Epidemic catarrh, or Distemper in HORSES and CATTLE, differs from common catarrh or cold, in attacking generally with greater violence; in being attended more commonly with fear; and its attacking many horses nearly at the same time. It is more prevalent in the spring than at other sea-

sons, especially after a mild winter. The symptoms of this disease in the horse, are a troublesome cough, heavy, dull appearance, loss of appetite, and quick pulse. A discharge from the nostrils takes place soon after, sometimes attended with a painful swelling under the jaw, similar to that in the strangles. In this stage the disease resembles glanders. In violent attacks of this disease, where it has been neglected, it often terminates in consumption of the lungs.

The cure consists in copious bleeding at the commencement; and, if the inflammatory symptoms do not soon abate, in six hours the operation should be repeated. If any doubt of the propriety of bleeding in this complaint should arise, a small quantity only might be drawn, and if, on cooling, the blood exhibits the buffy coat, and the membrane of the eye be redder than common, bleeding will be extremely necessary. Laxative medicines will also be useful; and mild diuretics, such as six drachms of nitre, half an ounce of powdered yellow rosin, and two drachms of tartarized antimony, mixed for one dose, may be given with advantage once in twelve hours. The animals' drink should be principally gruel, or oatmeal mixed with warm water. If a difficulty in swallowing occur, the throat should be blistered. If a swelling arise under the jaws, suppuration should be encouraged by fomentation and poultice. The head should be kept warm by means of a hood, and the nostrils steamed. See **STREAMING.** Moderate exercise is useful; but cold wind and rain must be avoided. Close filthy stables are, above all, injurious.

In formâ Pauperis. See **FORMA PAUPERIS.**

INFUSION, in pharmacy, the preparation of medicines by pouring boiling, or other water upon a substance in order to extract its virtues. See **DECOCTION.** The London College order a great variety of both infusions and decoctions. The manner of preparing the principal of these will be found under their respective articles. See **CATECHU, GENTIAN, HORSE RADISH, &c. &c.**

INJ

Ingenuousness. See CANDOUR.

INGOT, in the arts, a small bar of metal, made of a certain form and size by casting it in hollowed iron or brass moulds. The term is chiefly applied to the small bars of gold and silver.

INJECTION, any medicine made to be injected by a syringe, pipe, or other instrument, into any part of the body.

INJECTION, in anatomy, a mode by which anatomical subjects are preserved from decay, and their parts exhibited for the purposes of illustration. Two modes of preserving these subjects have been adopted: one in a dry state, and the other in a wet state. In the dry state the blood vessels are injected with a coarse injection, composed of six ounces of bees' wax, eight ounces of resin, and six ounces of turpentine varnish; this mixture is coloured according to circumstances, with some of the following colouring matters: vermillion, King's yellow, flake white, smalt, verditer, verdigris, lamp-black. They should be mixed with the turpentine varnish, and then added to the wax when melted. The injection should not be thrown into the vessels too warm; the degree of heat should be such, that the finger can be allowed to remain in it for a little while without much inconvenience. A still coarser composition may be made of tallow, oil of turpentine, and oil coloured with the coarser paints, such as red lead, &c. For minute injection, turpentine coloured with vermillion, painters' size coloured with any of the above paints, or equal parts of brown and white spirit varnish, answer very well.

In the wet state it has been usual to employ a spirit of wine above proof, or sometimes highly rectified. Mr. W. COOKE, (See Transactions of the Society of Arts, Vol. xxxvii.) has found that a saturated solution of muriate of soda, or *common salt*, answers the purpose equally well. The specimens for preservation are to be macerated in water, frequently changed, to deprive them of the colouring part of the blood which usually occupies three or four days if the substance be large; they are then

INK

to be placed in a solution of salt, kept in a common receptacle to saturate them with the salt. At the expiration of a few days they may be transferred into that bottle or solution in which they are permanently to remain. The solution in which they are finally to be kept should be a little below saturation. Every gallon of water dissolves about 3 pounds of salt. In order to guard against the crystallization which results from evaporation of the water, it is best to add about half an ounce of very clear water to every quart of the saturated solution.

INJUNCTION, in law, is a prohibitory writ generally issuing out of chancery, or other court of equity, restraining a person from committing, or doing a thing which appears to be against equity, conscience, &c. An injunction is usually granted for the purpose of preserving property in dispute, pending a suit: such as to restrain the defendant from proceedings at common law against the plaintiff, or from committing waste, or doing any injurious act. The methods of dissolving injunctions are various, depending of course upon the nature of the case, the deliberate opinion of the judge, &c.

INK, a fluid employed principally for the purpose of writing. It is most commonly of a black colour; red and other inks are, however, occasionally employed.

The following is said to be the best form for making writing ink: take of finely bruised galls three ounces, of sulphate of iron, (green copperas,) logwood shavings, and gum arabic, of each one ounce; of vinegar one quart. Put these ingredients into a bottle, and agitate them occasionally during twelve or fourteen days; then allow the coarser parts to settle, and pour off the ink for use. The annexed is another form, which will, perhaps, be found equally good: take of bruised galls one pound, on which pour one gallon of boiling rain water; mix them together, and stir them daily for one month. Then add six ounces of sulphate of iron, and two ounces of roch alum: when these are dissolved, add six ounces of gum ara-

INK

bic ; on the solution of which the ink may be poured off for use. The tendency of ink to become mouldy is much diminished by keeping a few cloves in the ink bottle, or by dissolving in each pint of the ink about three grains of corrosive sublimate.

The colour of common writing ink is apt to fade ; when illegible it may often be restored by washing the writing with vinegar, and afterwards with infusion of galls. Acids also destroy its colouring matter ; those inks which resist their action, contain some other colouring principle, usually finely powdered charcoal. Common writing ink may, therefore, be much improved by dissolving in every quart of it, one ounce of *Indian ink*.

Ink powder is made by merely powdering the ingredients above described, and mixing them in the same proportions. When used it merely requires mixing with water.

China, or Indian ink, may be made thus : take the kernels of apricot stones, and burn them in such a manner as to reduce them to powder, but without producing flame : this may be done by wrapping them in a cabbage leaf, and tying it round with iron wire : place it in an oven heated to the same degree as that required for baking bread : the kernels will be reduced to a sort of charcoal. Let it be reduced to an impalpable powder ; then form a pretty thick solution of gum-arabic in water, and having mixed with it the charcoal, let it be ground on a stone in the same manner as colours are ground. Put it afterwards into small moulds rubbed over with white wax to prevent its adhering to them. It is supposed that the ink brought from China is merely lamp-black and glue. The odour of Indian ink may be given to it by a little musk.

Red ink : boil two ounces of Brazil wood in a pint of water for a quarter of an hour, adding a requisite quantity of gum, and about half as much alum. Or take eight ounces of Brazil wood, four ounces of roch alum, one quart of distilled vinegar, and boil them for a quarter of an hour or more, strain and add

two ounces of gum-arabic. Or stale strong beer may be used instead of vinegar.

Blue Ink may be made by diffusing Prussian blue, or indigo, through strong gum water. *Yellow ink* by a solution of gamboge in gum water. Most of the common water-colour cakes, diffused in water, will make sufficiently good-coloured inks for most purposes.

An *Indestructible Ink* may be made thus : dissolve 25 grains of copal, in powder, in 200 grains of oil of lavender, by the assistance of heat ; add $2\frac{1}{2}$ grains of lamp-black, and half a grain of indigo. Or 120 grains of oil of lavender, 17 grains of copal, and 60 grains of vermilion. If these inks be found too thick, a little oil of lavender, or oil of turpentine may be added.

The composition of *Printers' Ink* is not certainly known, being kept a secret by the preparers ; but it is said that the following is one of the best forms for making it which has been made public : Let two quarts of linseed oil (some forms order nut oil) be boiled in a vessel capable of holding a triple quantity, over a strong fire till it emit a thick smoke. It is then to be kindled with a piece of paper, and suffered to burn for the space of a minute, when the flames must be extinguished by closing the vessel. As soon as the oil becomes cool, two pounds of black rosin, and one pound of hard soap, cut into thin slices, are to be added ; then the mixture is to be again placed over the fire ; and when the ingredients are perfectly dissolved, a pound of lamp-black, previously sifted, must be incorporated with the mixture ; after which the whole is to be finely ground on a marble stone. Ink for the rolling press is made with the same oil, and burnt in the same manner, and then mixed with Frankfort-black, and afterwards finely ground. The proportions are varied according to the fancy of the workman.

Red Printers' Ink is made by adding to the boiled oil about half its weight of vermilion ; a little carmine improves the colour.

INSANITY

morbid development of sensibility, and destruction of muscular vigour, that fills society with fools, which nature never makes, and mad-houses, with lunatics, is progressively pursued, to be completed by the vivid and incessant moral emotions which every one must suffer who enters that train of social life which is vainly said to be proceeding towards the grand perfection of human nature. Thus our organic powers, language; the brain and nervous system become the chief centre of vitality; sensibility is inordinately exalted; and then, by any unusual excitement, the ordinary moral relations of man with external nature become so far destroyed as to constitute the state which is qualified with the term madness." "There is certainly much truth in these observations: the only qualification which we feel it necessary to add is, that, whether *we will it or not*, the minds of children *will be exercised*, and the reflecting and reasoning faculties among the rest; and that there can be no question that a *prudent choice* in the objects which are presented to their minds, and of the circumstances by which they are surrounded, ought to be made for them. That undue and excessive attention to literary, and we may add mentally religious pursuits, is injurious to the health of young and growing minds, we entertain no doubt.

The remark that, the more polished, the more artificial the people, the more prone to insanity, is, we fear, too well founded: what is, at the same time, more severely mortifying to human pride?

Among the causes of insanity, besides these general and important ones, consisting of errors in moral education, famine, or a scanty supply of food, forms a striking feature. False or fanatic religion is also a cause of insanity, particularly with females; more especially is this the case where the mind wavers from one set of dogmas to another, till confidence is lost in all. Besides these, excess of love, fear, pride, hope, joy, &c; and too intense, or too long application to one subject, are causes of this disease.

Insanity may also be caused by blows, wounds, ulcers, bruises, or water in the head; congestions of blood in the brain; by excessive excitement; by debility; by suppression of the natural evacuations, of cutaneous disorders, &c.

The peculiarities attendant on insanity consist not only in a distortion and derangement of the reasoning faculties, defined by some *false perception*, but in an endurance of hunger, watching, fatigue, cold, and bodily pain, greatly beyond that borne by persons in ordinary health: to which may be added, in many cases, an extraordinary increase of muscular strength.

When the disease is *recent*, it has been demonstrated that eight or nine cases out of ten are most certainly curable; and hence is evinced the necessity of an early application of the best means for its distressing visitant. It is a gross error to suppose that persons attacked with this malady will, recover after it has continued the space of a year. Such an opinion is, doubtless, consigned many a manne to a premature and living tomb. Dr. GURROWS, the latest writer on this subject, assures us, that many persons have recovered after the lapse, not only of one, but of two years, and even a longer period.

Formerly, cruelty of treatment, by scourging, chains, and other modes of exemplifying the power of man over the forlorn manne, was had recourse to; but thanks to the wisdom and benevolence of a better era, kindness and soothing treatment, accompanied at the same time with a commanding decision and firmness, now bid fair not only to render the condition of the manne more tolerable during the continuance of the malady, but also to render his convalescence more certain, and his ultimate restoration to society more prompt and expeditious. The *strait waistcoat* alone, of all the different modes of coercion formerly adopted, appears to be the only one that is at any time necessary to be used.

We cannot lay down general rules for

the treatment of the various cases of insanity ; but where there is a manifest increased circulation of the blood, and altogether a high degree of excitement, copious bleedings, purging, &c. will be absolutely necessary ; and the food, in such case, should be of the lightest and least stimulant kind. But in cases of debility, particularly those occurring after small-pox, a nervous fever, &c. age, &c., the cure must not be attempted by bleeding, and such evacuations ; but, on the contrary, nourishing diet, clear air, moderate exercise, the use of wine, or weak spirit and water, beef-tea, &c. are indicated. *Purging*, however, particularly if the patient be costive, and in mania costiveness is a common symptom, appears to be necessary in almost every variety of the complaint.

In the cure, also, of most diseases of insanity, one of the principal and previous steps is to remove the patient from the circumstances, whether of scene or society, which might appear to have been instrumental in producing the disorder ; at the same time, it should not be forgotten, that peculiar cases may arise, when such removal may even aggravate the disease.

In short, and to conclude this article, the cure of diseases of insanity requires the greatest skill and judgment which a physician can possibly possess. He should not only be thoroughly acquainted with the diseases of the body, but also with those of the mind in their most delicate and tender ramifications : he should be at once the most humane, the most benevolent, and the wisest of our species. The present age has done much towards an improvement of the treatment of diseased mind, but we have still *much more to learn*. See MAD-HOUSE.

INSECT, or *Insecta*, in zoology, a class of animals so called from a separation in the middle of their bodies, whereby they are divided into two parts, which are joined together by a small ligature, as in wasps and common flies. Entomology is the science or knowledge of insects. See that article, and also

ZOOLOGY, BEE, BEETLE, and various other articles in the order of the alphabet.

Small insects are in general best destroyed by the fumes of burning tobacco.

Insects may be *preserved* for the purpose of studying their structure as a branch of natural history thus : beetles and others of the same class may be caught with a gauze net, or a pair of pincers. They may be destroyed either by immersion in hot water or spirit of wine ; they may then be fixed to a piece

posed to the air till all their moisture be evaporated. Bugs, crickets, and such insects may be killed in the same manner, or by pouring a drop of oil of turpentine on their head. Moths, butterflies, and all other flies furnished with membranous wings, may be taken with gauze nets ; then pierced through the shoulders between the fore wings with a pin ; and, after gently squeezing the breast of the insect, it will immediately perish. Lobsters, scorpions, or such insects as have no wings, may be preserved in spirits. The various other kinds of insects may either be killed with oil of turpentine, or the fumes of sulphur. After insects are deprived of all moisture, they should be kept very dry, and closely shut up in the boxes or cabinets where they are to remain. The bottoms may be covered with pitch, and paper on the surface ; or they may be lined with cork impregnated with corrosive sublimated, in a strong solution of sal ammoniac.

INSTINCT, the operation of the principle of animal or vegetable life, by the exercise of certain innate powers directed to definite ends and productive of definite effects. It is in this sense opposed to reason, which is the operation of the intellectual powers directed to the production of effects.

INSTITUTION, or **INSTITUTE**, term lately adopted in Europe, implying a species of academy of the highest order, where general literature, and the arts and sciences are taught.

Four Institutions are at present in ac-

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tivity in this metropolis, viz. the Royal Institution, the London Institution, the Surrey Institution, and the Russell Institution. All of these possess libraries more or less extensive; they have also suitable reading rooms, where may be found the daily, weekly, monthly, and quarterly publications, with the most valuable new books. Lectures are also given at most of these establishments at different seasons of the year, chiefly in the winter and spring, on various sciences, such as chemistry, natural philosophy, oratory, general literature, the belles lettres, music, architecture, mechanics, &c. &c.

They are supported in part by an original subscription, formed by numerous share-holders, and also by annual subscribers. No money is received at any of them for admission, admission being restricted to the share-holders, the annual subscribers, and, in certain cases, by tickets transferrable by the share-holders to whom they choose.

In some of these, the Surrey and the Russell Institutions, the books, except they are very voluminous and valuable, or dictionaries, circulate among the members.

These institutions are generally open from nine in the morning till ten at night, and have every accommodation in warmth, light, and other conveniences. They are the cheapest mode of diffusing knowledge, whether useful or luxurious, that ever was invented, or indeed that ever existed in any age. The annual subscription to the Surrey Institution, for example, being only three guineas.

Some of the first men of the age have given lectures at these Institutions: DAVY, BRANDE, ACCUM, SMITH, COLERIDGE, CAMPBELL, HAZLITT, COLLIER, CROUCH, &c. &c.

INSURANCE, in law and commerce, a contract whereby one party engages to pay the losses which the other may sustain, for a stipulated premium or consideration. The most common sorts are insurance against the dangers of the seas, insurance against fire, insurance of debts, and insurance of lives.

Every prudent individual, who has

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property in houses, or goods, or who risks it at sea, &c., should take care to insure it in some respectable insurance office. The premiums for insurance are, unless under particular circumstances of danger, very reasonable. The following are the annual premiums to be paid to the *Royal Exchange Insurance Company*: for common insurance, not exceeding in value 3000*l.*, 2*s.*—for *Hazardous insurance*, not exceeding 2000*l.* in value, 3*s.*—and for *doubly hazardous insurance*, not exceeding 2000*l.* in value, 5*s.* per cent. Insurance on jewels, plate, &c., and to cotton spinners, oil, spermaceti, wax, or sugar refiners, &c. &c. must be made by special agreement.

Insurance for lives is, also, very frequently effected at the insurance offices. It consists in paying a certain sum of money annually during the life of a person, on condition of being paid a certain sum at his death. Thus a life not exceeding the age of thirty years may be insured for 100*l.*, to be paid in case of death within one year, for 1*l.* 13*s.* 3*d.* and so on, increasing or lessening the annual premium in proportion as the person is older or younger than the period here specified; and also, of course, according to the state of health or disease in which the person should happen to be at the time the insurance is made.

INTELLECTS, the understanding, the faculties of the mind. See **MIND**.

INTEREST, a sum reckoned for the loan of another sum or principal; it is usually estimated at so much per cent., or 'y the 100. The highest legal interest now allowed in England is, except in the case of pawnbrokers, after the rate of five per cent. per annum.

Interment. See **BURIAL**.

INTERMITTENT FEVER, a disease in which the symptoms subside entirely for a given period; such is the **AGUE**; which see.

INTESTINES, that convoluted membranous tube extending from the stomach to the anus, commonly known by the name of the bowels. See **ABDOMEN**.

INTOLERANCE, want of patience

IPECACUANHA

and candour to bear the opinions of others; or, in other words, intellectual oppression. See TOLERATION.

Intoxication. See DRUNKENNESS.

IODINE, a simple and singular substance discovered in 1812, by M. Courtois of Paris. It is procured by the following process: lixiviate powdered kelp with cold water; evaporate the lixivium till a pellicle forms, and set aside to crystallize; evaporate the mother liquor to dryness, and pour upon the mass half its weight of sulphuric acid; apply a gentle heat to this mixture in a glass alembic: fumes of a violet colour arise, and condense in opaque crystals having a metallic lustre. Iodine has a bluish black colour; its lustre is metallic; it is soft and friable. Its specific gravity 4.946. It produces a yellow stain upon the skin. Its smell resembles that of diluted chlorine; its taste is acrid. It is extremely volatile, and at a temperature of between 60° and 80° produces a violet vapour; at 120° or 130°, it rises more rapidly, and at 220° it fuses, and produces copious violet coloured fumes. It is very sparingly soluble in water; much more so in spirit of wine. It combines indirectly with oxygen, and directly with chlorine: it combines also with many of the metals in different ways and proportions.

IPECACUANHA, a medicinal root obtained from the *Cephaelis*, or *Callicocca Ipecacuanha*, a perennial plant found growing in shadowy moist situations in the forests of Brazil; it flowers in December or some of the following months, and its berries ripen in May.

The root is simple, or somewhat branched, and furnished here and there with short radicles; it is roundish, three or four inches long, and two or three lines in thickness; bent in different directions, externally brown and beset with prominent unequal roughish rings or wrinkles. In choosing them the larger roots, which are compact, and break with a resinous fracture, having a whitish grey, somewhat semitransparent appearance in the inside of the cortical part, with a pale straw-coloured medullary fibre, are to be preferred. The en-

tire root is inodorous, but the powder smells faint and disagreeable. The taste is bitter, subacid, and extremely nauseous. It has been long in use as an emetic, and for other purposes.

The emetic properties of this root is found to depend on a peculiar substance which has been separated from it, and is called EMETIN; it is in the form of brownish red scales, which are nearly inodorous, and have a slightly bitter, acrid, but not nauseous taste. It is soluble in water in all proportions, without undergoing any alteration, and deliquesces in a moist atmosphere. It is also soluble in alcohol. This substance varies in the three varieties of ipecacuanha root found in the shops: 16 parts of it in 100 have been obtained from the cortical part of the brown; 14 in 100 from the grey, or the *callicocca ipecacuanha*, and only 5 parts in 100 from the white ipecacuanha. Some experiments have been made with this substance, but not sufficient to enable us to speak of it with proper precision.

The root of ipecacuanha in powder, when administered in large doses, is emetic; in smaller ones diaphoretic and expectorant; and, in still smaller doses, it acts as a stomachic, stimulating, and giving energy to the digestive organs. As an emetic it is mild, safe, and certain in its operation. Given in dysentery and diarrhoea, in doses sufficient to excite nausea without vomiting, it produces excellent effects: it is also given in spasmodic asthma, dyspepsia, hooping cough, and epilepsy. It is used as a sudorific in gout, dropsy, and other affections where sweating is necessary: it is, in these last cases, generally given with neutral salts. See below. It is also very useful as an expectorant in catarrhal affections, pneumonia, after bleeding, and in the early stage of pulmonary consumption. Its emetic operation is quickened by combination with emetic tartar; and counteracted by opium and vegetable acids.

The dose of the powder, to produce full vomiting, is from fifteen grains to half a drachm; of the aqueous *infusion*, made by macerating for an hour two

IRI

drachms of the powdered root in six fluidounces of boiling water, and filtering, from one to one fluidounce and a half may be taken every half hour, till vomiting is produced. The operation is continued, and rendered much easier to the patient, by drinking, during the intervals of vomiting, large draughts of tepid water. For producing the other effects of ipecacuanha, it should be given in doses of one, two, or three grains; generally in the form of pills; and repeated every four or five hours.

The *compound powder of ipecacuanha* is made thus: Take of ipecacuanha root powdered, hard opium powdered, of each one drachm; of sulphate of potash powdered, one ounce—mix them. This was formerly known under the name of *Dover's powder*. It operates as a powerful sudorific, in all cases, whether inflammatory or not, in which full sweating is indicated. The dose is from five grains to one scruple, given diffused in water, or as a bolus, assisted by a plentiful dilution of tepid fluids; which, however, must not be drunk immediately after taking the powder. Ten grains of this medicine contain one grain of opium.

A *Wine of ipecacuanha* is made thus: Take of ipecacuanha-root bruised, two ounces; of sherry-wine, two pints. Macerate for fourteen days, and filter. As an emetic, this wine is equally efficacious, and, at the same time, milder in its operation than antimonial wine; it is therefore better adapted for infants. For this purpose, a tea-spoonful, or half a fluidrachm, should be given for a dose, and repeated every ten minutes till it operates. In smaller doses it answers the same purposes as the powder: it is given in coughs, diarrhoea, and dysentery.

IRIDIUM, a metal obtained from the ore of platinum. It is of a whitish colour; its specific gravity above 18. Its most marked character is, its extremely difficult solubility in acids.

IRIS, in anatomy, the coloured circular ring in the eye, beneath the crystalline lens, which surrounds the central or dark part, called the pupil.

IRO

IRIS, in botany, a genus of plants comprehending fifty-five species, scattered over the globe. The following are the chief:

The *Florentina*, or Florentine iris, or orris, is a native of Italy, and the south of Europe. In its recent state, it is extremely acrid, and when chewed, excites a pungent heat in the mouth, which continues several hours; on being dried, this acrimony is considerably abated: the taste is slightly bitter, and agreeable, approaching that of violets. The fresh root is cathartic, but of no importance as a medicine. The dried root in powder, is well known as an elegant perfume.

This species is cultivated in our gardens as an ornamental plant. The flowers are large, and of a pale whitish blue colour. This and the following may be propagated by parting of the roots.

The *Germanica*, Common iris, or Fleur de luce, a native of Germany.

The *Pseudacorus*, or Yellow water-flag, is found in the wet woods, marshes, and on the river banks of our own country, with large yellow flowers.

There is a species of the iris found more commonly in the provinces than in London, or its neighbourhood, which deserves cultivation for the fragrance of its smell. The petals of the flowers are long and narrow, and of a pale blue colour, intermixed with yellowish white.

IRISH-SLATE, or *Lapis Hibernicus*, a kind of soft stone, of a dirty colour, formerly used in medicine, but of no importance whatever.

IRON, or *Ferrum*, the most useful and the most plentiful of all the metals. It is of a blue-white colour, very malleable and ductile, and fusible at a white heat. Its specific gravity is 7.78. It has not been so long known as many of the other metals: it was, however, employed in the time of Moses for cutting instruments. It is extremely ductile, but it cannot be hammered into very thin leaves.^a It is also attracted by the magnet.

The most important native combinations of iron, whence the immense supplies for the arts of life are drawn,

IRON

are the oxides, or ores of iron ; it is also found combined with sulphur and with several acids. The yellow, and most of the red ochres are impure oxides of iron. It is so abundant that there are few fossils free from it ; even at the surface of the earth where the soil is red, the presence of iron may be generally concluded. It is also found in some animal and vegetable bodies. Iron is also sometimes found native, and is then usually regarded as of meteoric origin : for it is invariably alloyed with ten per cent of nickel. Native iron is flexible, cellular, and often contains a green substance of a vitreous appearance. It has been found in Africa, America, and in Siberia, where a mass weighing 1600lbs. was discovered by PALLAS. A sword of meteoric iron, obtained from the Cape of Good Hope, has lately been made by Mr. Sowerby, and presented to the Emperor of Russia.

The native oxides of iron constitute a very extensive and important class of metallic ores. They vary in colour, and are found in Sweden, Elba, &c. and also in abundance in various other parts of the world. England also affords them in great quantities. The principal kinds are the following : *Magnetic iron ore*, generally black. Specific gravity, 4.5 ; very abundant in Sweden, and is particularly esteemed for making steel. *Iron glance*, or *micaceous ore*. *Hematite*, or red iron-stone, abounds in Lancashire : most of our iron-plate and wire is made from it. And *Clay iron-stone* found in masses of different shapes and sizes, in Shropshire, South Wales, Staffordshire, and Scotland. Although this is far from the purest iron ore found in this country, it is the chief source of the cast and bar iron in ordinary use. Its employment is chiefly referable to the coal which accompanies it.

The essential part of the process by which these ores are reduced to the metallic state, consists in decomposing them by the action of charcoal, at high temperatures. The argillaceous iron of Wales, Shropshire, &c. is first roasted, and then smelted with lime-stone and coke ; the use of the former being

to form a fusible compound with the clay of the ore, by which the latter is enabled to act upon the oxide, and to reduce it to the metallic state.

Iron unites with a great variety of very different bodies, and forms various compounds. It also dissolves in various acids, forming different neutral salts : the most important of these is *sulphate of iron*, commonly called green copperas. See SULPHATE OF IRON.

The rust of iron is an oxide of the metal. But oxides of different colours may be obtained from it, by different processes. One may be made thus : Mix iron filings with twice their weight of flowers of sulphur, and as much water as will make them into a paste, which on standing to rest for some hours, swells up, and is then pulverized, put into a heated crucible to deflagrate, and kept constantly stirring, with an iron spatula, till it falls into a deep black powder. This powder urged longer in the fire becomes red, and in this state has been called *crocus martis*. Ground with oil, this oxide, as well as some others of this metal, forms a useful pigment.

Of the alloys of iron, *tin-plate* is the most important. See TIN-PLATE.

Iron is found in commerce in three different states, viz. as *cast-iron*, *wrought-iron*, and *steel*.

Cast-iron consists of iron united with more or less carbon, and a portion of oxygen, often sulphur, and phosphorus and silica. By the processes of *puddling* and rolling, these substances are burned away, or squeezed out, and thus cast-iron is converted into *wrought-iron*. *Steel* is a compound of iron with carbon, the proportions being variable. It combines the fusibility of cast, with the malleability of wrought iron ; and when heated and suddenly cooled, it becomes very hard, whence its superiority for the manufacture of cutting instruments. If kept for a long time in fusion, it loses its carbon, and becomes pure iron. See STEEL.

Iron is used for such innumerable and important purposes in the arts, as well as in domestic life, that it is quite

IRON

impossible to enumerate them. It is, however, beyond question, the most useful, and intrinsically valuable of all the metals. What renders it so much more valuable is, that it is, of all the metals, the least injurious to the animal system, being in no respect poisonous.

Iron, when taken internally, as a *medicine*, is a powerful tonic, increasing the general excitement, promoting the digestive powers, giving a more florid hue to the blood, and augmenting in a great degree the energy of the muscular fibres. For this purpose it answers most effectually when given in minute doses, such as it is found in chalybeate springs, and in long-continued use. The diseases in which it is used are, those accompanied with general debility, such as chlorosis, hysteria, dyspepsia, fluor albus, gleet, palsy, scrofula, rickets, and the last stage of phthisis. It is also useful in convalescence from almost all acute diseases; it has also been recommended in cancer. Iron should not be given whenever an inflammatory state of the system prevails; nor in an increased secretion of bile, particularly in sanguineous habits; it producing, in such states of the system, a variety of unpleasant symptoms, such as heat, head-ach, thirst, &c.*

The officinal preparations of iron are many; we cannot even enumerate them; the principal are the following:

Filings of iron, are given in doses of from five grains to half a drachm, made into an electuary with honey, or into pills with myrrh, or some bitter extract, such as chamomile or gentian, for dyspepsia, chlorosis, hysteria, and general debility, more especially where an acid is present in the alimentary canal.

The *sulphate of iron* is given in doses of from one grain to five, combined with ammoniacum, rhubarb, myrrh, or bitter extracts.

The *subcarbonate of iron* is made thus: Take of sulphate of iron eight ounces; subcarbonate of soda, six ounces; of boiling water one gallon. Dissolve, separately, the sulphate of iron and the subcarbonate of soda, in eight pints of water, then mix together

the solutions and set the mixture aside, that the powder may subside; then pour off the supernatant fluid, wash the subcarbonate of iron in hot water, and dry it wrapped up in bibulous paper in a gentle heat. The dose is from four grains to thirty, three times a day, combined with myrrh, or aromatics.

This preparation sits easier on the stomach than the common prepared carbonate, or rust of iron.

Tincture of muriate of iron, is an active and elegant preparation of this metal, well adapted for all the diseases in which chalybeates prove serviceable. It is also recommended in dysuria depending on spasmodic strictures of the urethra, the dose for which is five or six drops, repeated every ten or fifteen minutes, until nausea be induced. The usual dose is from ten to thirty drops in a glass of water; but it may be gradually increased to one hundred and twenty, or two liquidrachms. It is also used externally, as a styptic, in cancerous and fungous sores.

The *wine of iron* is made thus: Take of filings of iron two ounces, of sherry-wine two pints; mix them, and set the mixture aside for a month, shaking it every day; then filter through paper. This is the most pleasant of all the preparations of iron. It is given in chlorosis, and the relaxed habits of young females. The dose is from one to six fluidrachms twice or thrice a day.

The *compound pills of iron* are made thus: take of myrrh in powder two drachms: subcarbonate of soda and sulphate of iron of each one drachm. Rub the myrrh with the subcarbonate of soda; then having added the sulphate of iron, rub again; and lastly, beat the whole into a uniform mass. This is a useful emmenagogue pill, and has been long known to the public as a quack medicine, under the name of *Austin's pills*. The dose is from ten grains to one scruple, twice or three times a day.

Iron Bridge. See BRIDGE.

Iron-moulds. See INK.

IRRIGATION, in agriculture, the artificial watering of land. Water is employed in various ways for the im-

IRRIGATION

provement of land. Either by the process of what is strictly called *irrigation*, when the water trickles over the surface of the land; by *flooding*, when it covers the soil completely for a longer or shorter period; or by *warping*, when the water acts merely as a conductor of the *warp*, or mud, by which the improvement is effected.

Irrigation promotes the melioration of *grass* lands, in preserving a favourable temperature; in improving the crop by the nourishing substances which it conveys; by destroying heaths and other weeds which grow best in a dry soil; and as a mere element, water is beneficial more especially in dry seasons.

The system of watering land, however, can never be carried to perfection unless when accompanied by drainage and enclosure. Stagnant water and impetuous torrents do essential injury; but if water be entirely under command, so that it may be laid on and taken off at pleasure, it may become a most useful instrument in the hands of the skilful husbandman. Drainage is, therefore, a necessary preparation for irrigation: the drains, however, in such cases should be open and not covered over.

In the East Indies, not only rice, but wheat and barley, are raised by means of irrigation; and it has long been a practice in some parts of Scotland to enrich the soil for crops of grain by the same means. Water alone, however, without the addition of other substances, will not bring grain to perfection; hence, though from year to year it may be applied to meadow and pasture grass with success, yet it cannot be repeated with advantage to *corn*, except at considerable intervals of time, or accompanied with manure. A system of irrigation for corn seems to have succeeded in the western part of Somersetshire, at Dunster; and it does certainly appear that upon particular soils, and under certain circumstances, irrigation for corn is advantageous. But on the whole, the improvement of grass seems to be the great object to which the watering of land is applicable.

Clear spring-water, in the state in
67.

which it issues from the hills, is certainly of a fertilizing quality, more especially where the strata are calcareous. Where river water is accessible, it is commonly laden with many enriching substances; and is then productive, not only of temporary, but of permanent improvement.

Sea, or salt-water, in sufficient quantity to cover the surface of the land, not containing *salt-water grasses*, is destructive to the generality of meadow grasses, and, therefore, cannot be employed. But where grass land is periodically overflowed by the sea, and the grasses congenial to salt-water irrigation grow there, of course, the salt-water flooding is not only useful, it is absolutely essential for the growth and even preservation of such grasses: for being deprived of their usual saline aliment they die. These are facts, perhaps, not generally known; but our own experience enables us to state them with confidence.

We think, however, that irrigating poor corn lands with sea-water, *previously* to their receiving the seed, and perhaps before the last ploughing, may be advantageously adopted.

Water impregnated with iron is now known to be friendly to vegetation, but that containing other mineral substances, such as lead, or copper, never does good.

Irrigation is not restricted to any particular description of land: for land naturally wet may be greatly improved by it when accompanied by drainage; and it is equally beneficial to dry land.

Water meadows are of two sorts; *flowing*, calculated for a flat country; and *catch-work*, for sloping grounds. In the first mode the land is formed into broad ridges, commonly from thirty to forty feet wide, and nine or ten poles in length; as in such situations the great object is, when once brought on, to be able to carry off the water quickly; the ridges therefore should be high; more of the failures in irrigation arise from the ridges not being sufficiently high, and the slopes not being sufficiently steep, than from any other cause.

It is difficult to give an intelligible written description of the *catch-work*.

IRRITABILITY

meadow. To be properly understood, the operation must be seen. It may, however, in general be remarked, that the system is calculated for sloping grounds; and that after the water is brought from the original stream into a new cut, it is stopped at the end on as high a level as the situation admits, by which the water is made to fill the trench, then to run over at the side, and flood the land below. It is necessary to cut small parallel trenches at the distance of 20 or 30 feet below the superior trench, in order to catch the water again, and the plan of spreading or diffusing is continued till the water reaches the bottom of the meadow. See DRAINING.

A great advantage attending the catch-work system is, that it is not only less expensive, but the same quantity of water will do much more work.

The season of watering land must depend upon the purpose for which it is intended. For early grass, or hay, the spring months are, according to circumstances, advantageously employed. The best seasons for warping are said to be June, July, and August; but, however, land may be warped at any season, provided the weather be dry, and the river low. *Warping in spring is attended with no peculiar advantage, more than in the summer, as the sediment must lie to soak and dry before the ground be cultivated.

IRRITABILITY, in physiology, that power or property of animals, and particularly of their muscles, in consequence of which their fibres, on being touched, contract, or are otherwise set in motion.

The term irritability is also applied to similar operations in vegetables, exemplified in the expanding of flowers by light, the closing of the leaves of the sensitive plant by contact, or pressure, &c.

The irritable, or contractile fibre, when separated from the animal or the plant, preserves its irritability for some time, and continues to contract upon the application of any stimulus. It retains also this property when it is cut into

pieces, as is observable on dividing the proboscis of a butterfly, or the stamina of plants. The fluids in animals and vegetables are also said to be endued with this property. The degree of irritability of both solids and fluids is constantly changing; it varies according to the age and habit of the same animal, and the same plant, and according to the sex, organization, and size of the different individuals. It is increased by the absence of the common and habitual stimuli; and is weakened by the too frequent application of a stimulus too powerful.

The *state of health*, or tone of the fibre, consists in a certain quantity of the irritable principle necessary for its preservation. To maintain this state, the action of the stimulus applied to it must be strong enough to carry off the surplus of the irritable principle which the lungs and the circulation of the fluids are continually supplying. To this end a certain *equilibrium* is necessary between the stimuli applied, and the irritability of the fibre; in short, that the quantity of all the stimulus acting upon it may be always nearly equal and powerful enough to carry off from the fibre the excess of its irritability, and not so strong as to carry off more than this excess.

When the stimulus acting upon the fibre is not great enough to carry off its excess of irritability, the irritable principle accumulates, and, in numerous instances, produces disease.

When the stimulus acting upon the fibre is too great, the fibre is deprived of that portion of irritability necessary for its healthy function, and is, of course, in a state of exhaustion. Hence also disease is often induced. This exhaustion is either *temporary* or *irreparable*. In the state of temporary exhaustion, the application of a stimulus will not make it contract; but as soon as the irritability is again accumulated, the fibre, upon the application of a stimulus, will again contract.

The *total*, or *irreparable* exhaustion of the fibre consists in a total loss of its irritability, as in the case of gan-

grene. The fibre changes its colour, becomes dark or black, and subject to the laws of inorganized matter, and begins to decompose and putrefy. A very powerful stimulus will, in a very short time, reduce the fibre to this state. Such, for instance, is the state of the fibre in animals killed by the bite of a rattle-snake; in animals destroyed by a knife dipped in the juice of the aconite, or wolf's-bane; or in poisoned arrows. The irritability of many insects, and of the greatest part of plants, is irreparably exhausted by the stimulus of the propagation of the species, so that they die the moment the work of generation is completed.

All the diseases of animals and vegetables may, therefore, be arranged under two heads: the diseases arising from an accumulation of irritability, and the diseases arising from an exhaustion of the irritability.

Remedies remove the disease by their action upon the irritable fibre: by exhausting the irritability, when the disease is that of accumulation; and by diminishing the action of the common stimuli, and consequently by preventing a total exhaustion, when the disease is that of exhaustion. See EXCITABILITY, EXCITEMENT, MEDICINE, and STIMULUS.

ISCHURY, a suppression of urine. See URINE.

ISINGLASS, or *Ichthyocolla*, a well-known substance, consisting, when good, of pure, or nearly pure, gelatine. It is prepared from certain parts of the entrails of several fishes; the best is obtained from the sturgeon, and is almost exclusively prepared in Russia. It should be free from taste and smell, and entirely soluble in warm water; which, however, is seldom the case, in consequence of the presence of some albuminous parts. When the jelly of isinglass is concentrated, and carefully dried, it forms a very choice kind of glue.

The sounds, or air-bladders, of fresh-water, as well as many salt-water fishes, may be employed in the preparation of isinglass. The intestines and perito-

næum may be also used for the same purpose; and even the sinewy parts. These last are directed to be boiled in water till they are dissolved; the viscid liquor is strained and suffered to cool, when the fat is to be carefully taken off, the liquor again boiled to a due consistence, then cut in pieces, rolled into a semicircular twist, and afterwards dried. The membranous parts are, it is said, merely cleansed, rolled into shapes, and then dried.

Isinglass is used for a variety of purposes in the arts. It is also used by the brewers, in immense quantities, for fining their liquors. Consisting principally of gelatine, it is of course nutritious, and affords a ready means of making, with three drachms, and a pint of water, an elegant jelly, which may be flavoured with lemon or orange, &c.

It is found in commerce in several forms; *short staple*, *long staple*, *book leaf*, and *picked isinglass*. The latter is sometimes adulterated with pieces of bladder, and the dried skins of soles.

100 parts of good isinglass consist of 98 of gelatine, and 2 of the phosphates of soda and lime.

ISSUE, a small artificial aperture, or ulcer, in the muscular parts of the body, for the purpose of discharging superfluous moisture, or of giving vent to noxious humours, &c. Issues are of three kinds, the *blister-issue*, the *pea-issue*, and the *seton*, or cord.

Issues are usually made in the arms, legs, or back, either by caustics or by incision. They are applied for various disorders; chiefly of the head, eyes, ears, teeth, &c., which are thus relieved, and sometimes cured.

Issue Peas are either the common dried garden peas, or instead, kidney beans, gentian root, or orange peas are used. Orange peas, and some others, are kept in the shops, turned smooth for the purpose. As such applications swell and become otherwise unfit for continuance in the issue, they should be occasionally changed.

Issue Plasters may be made of some simple adhesive plaster, spread on leather or paper. But to such an extent

are pretended nostrums carried in this country, that even these simple plasters have not escaped the cupidity of quacks.

ITCH, Scabies, or Psora, a cutaneous and contagious disease, appearing first on the wrist, and between the fingers, in small pustules, with watery heads, attended very often with considerable itching. It is supposed to be caused by an insect, a species of the genus *acarus*, viz. the *acarus scabiei*, which, when viewed with a good microscope, is white, with reddish legs; the four hind ones having a long bristle.

If the itch be neglected it degenerates into troublesome and filthy sores. It is rarely, however, found in any individual or family where a strict attention to cleanliness is observed.

The most effectual remedy for this complaint is *sulphur*; although quicksilver, in consequence of the smell occasioned by the former, is sometimes applied; but against its application in the cure of this disease, we must protest: for the application of quicksilver to the surface of the body is always attended with more or less danger, and should never be adopted, unless absolute necessity requires it. If, therefore, the mode recommended under the article **INFANCY**, for the cure of this disease, should not be effectual, the following should be adopted: Take of hog's lard two ounces; of flowers of sulphur one ounce; of white hellebore-root, in powder, one drachm; of olive-oil one ounce; of essence of bergamot sufficient to impart a pleasant smell. Mix the whole well together, by rubbing on a smooth stone. This ointment will be sufficient to anoint the whole of the body, except the head, once. The operation should be performed just before going to bed. The patient should remain in bed, thus anointed, for twelve hours; and, on rising from it, should be washed with warm water and soap, thoroughly clean; putting on at the same time, not only clean linen, but, if possible, every other kind of clean clothing. The clothes previously worn must be either washed, or otherwise well purified. The instances are rare indeed

in which this process once gone through, will not effect a perfect cure. A day previous to the application, the patient should take a dose of one drachm or more of the flowers of sulphur, mixed into an electuary with syrup, treacle, or milk; and the like dose a day or two afterwards.

IVORY, a hard, solid, and firm substance, of a white colour, and capable of a very good polish. It is the tusk of the elephant, and is hollow from the base to a certain height. It is brought into this country from the East Indies, and the coast of Guinea. Ivory is used in the arts for various purposes. The shavings of ivory produce, by boiling in water, a jelly similar to that of hartshorn. Ivory may be stained of various colours. See **BONES**.

IVORY-BLACK. When bones are submitted to destructive distillation, the gelatine and albumen which they contain are abundantly productive of ammonia: water and carbonic acid are also formed, and a portion of highly fetid empyreumatic oil. There remains in the vessel a quantity of charcoal mixed with earthy substances, which is, in that state, called ivory-black. It is employed as the basis of some black paints and varnishes. See **COLOUR-MAKING**.

IVORY PAPER, a paper lately invented by Mr. EINSLE, to be used instead of ivory for drawing and miniatures, and is said to be superior to ivory itself. The process for making it is detailed in the 37th volume of the Transactions of the Society of Arts. It consists in the preparation of a size from cuttings of parchment, uniting, by a similar size, several sheets of outside drawing paper, and afterwards covering it with the size, having previously mixed in it some plaster of Paris in fine powder. Plaster of Paris gives a perfectly white colour; oxide of zinc mixed with plaster of Paris, in the proportion of four parts of the former to three of the latter, gives a tint very nearly resembling ivory; precipitated carbonate of barytes gives a tint intermediate between the two.

IVY, or *Hedera*, a genus of plants

IVY

comprehending four species, two natives of Jamaica :—the *pendula* and *nutans* ; one the *terebinthinacea* of Ceylon ; and one the *helix*, common to our own country. The leaves of this last have little or no smell, but a very nauseous taste. It is perennial, climbing evergreen, attached in general to trees or walls. If remaining undisturbed for ages, its trunk obtains a considerable size, sometimes even a foot or more in diameter. It is esteemed, and in fact is, an ornamental plant. The leaves are occasionally applied to corns.

IVY-TREE, AMERICAN, AMERICAN DWARF LAUREL, or *Kalmia*, a genus of plants consisting of four species : the *latifolia*, or broad-leaved *kalmia*, is a beautiful shrub rising from six to twelve feet high ; the flowers are white stained with purple : a native of Carolina and Virginia. The *angustifolia*, the *hirsuta*, and the *glauca*, make up the genus. The honey secreted by bees from the two first is poisonous.

Ivy, Ground. See **GROUND-IVY**.

J.

JALAP

JACK, in mechanics, an instrument of common use for raising heavy timber, or very great weights of any kind.

JACK, THE ROASTING, or common kitchen jack, is a compound engine, where the weight is the power applied to overcome the friction of the parts, and the weight with which the spit is charged ; and a slow, steady, and uniform motion is obtained by means of the fly.

The **BOTTLE JACK**, used for the same purpose, is kept in motion by a spring, which requires occasional winding up. Some bottle jacks answer the purpose of roasting extremely well, whilst others are good for nothing. In the purchase of these, therefore, considerable care is requisite.

Jack, smoke. See **SMOKE JACK**.

Jack Daw. See **CROW**.

Jack Snipe. See **CURLEW**.

Jackal. See **DOG**.

JADE, in mineralogy, a species of talc, of a green colour, found in various parts of the world. The inhabitants of New Zealand use it for hatchets, and other cutting instruments, it being very hard, and not melting in the strongest fire.

JALAP ROOT, or *Radix Jalapa*,

is the root of the *Convolvulus Jalapa*, a species of bindweed growing in South America. The best comes to this country from Vera Cruz, cut in transverse slices, and also in egg-shaped pointed entire tubers, covered with a very thin, wrinkled, brown cuticle. It has a peculiar odour, and an acidulous, slightly pungent taste. The powder is pale brownish ; when very dry, inclining to white. Water and alcohol separately extract a part, and when mixed, the whole of the active constituents of this root.

Jalap is a stimulant cathartic, acting briskly on the bowels ; and although griping severely, yet safe and efficacious. As a hydragogue it is supposed to possess singular efficacy.

The dose of the powder is from ten grains to half a drachm in powder, pills, or bolus. An *extract* and *tincture* are also ordered by the London College. The dose of the extract is, for adults, from ten grains to one scruple ; if given to children, it should be rubbed with sugar and almonds, or mucilage, so as to form an emulsion, in which state it operates freely and without griping. The dose of the *tincture*, which is made with four ounces of the powdered root,

JAM

and one pint of proof spirit, digested for fourteen days and filtered, is from one fluidrachm to half a fluidounce.

JAM, a conserve of fruits boiled with sugar and water. *Jams* are pleasant sweetmeats for those whose digestive faculties are good; but from their containing a large quantity of sugar, they, in general, disagree with all dyspeptic patients, and should therefore be avoided. Those possessing considerable acidity are, however, the least injurious.

Jamaica pepper. See **ALLSPICE**.

JAMES'S POWDER, a quack medicine prepared by Dr. JAMES, the basis of which is antimony.

The following is the mode, extracted from the records of Chancery, in which Dr. James stated it ought to be made, when he took out a patent for its sale: take antimony, calcine it with a protracted heat in a flat, unglazed earthen vessel, adding to it, from time to time, a sufficient quantity of any animal oil, and salt well dephlegmated; then boil it in melted nitre for a considerable time, and separate the powder from the nitre by dissolving it in water.

Dr. James also specified in chancery his method of making his mercurial, which he calls a pill; but this specification is equally vague with that for the powder. He also observes, the dose of these medicines is uncertain, but in general, thirty grains of the antimonial, and one grain of the mercurial, is a moderate dose.

To these specifications Dr. James was sworn. There is, however, every reason for believing, that the powder sold under his name at the present time, is prepared in a very different manner: indeed, we are not aware how it is possible to prepare, by the above directions, a medicine of uniform strength at all.

As, therefore, the composition of this medicine is not accurately known, we on every account forbear to recommend it, conceiving the conduct of Dr. James a gross fraud upon the public; and knowing, besides, that the **ANTIMONIAL POWDER**, ordered by the London College, is in every respect as useful and valuable as this nostrum.

JAU

Japan earth. See **CATECHU**.

JASMINE, or *Jasminum*, a genus of plants, consisting of twenty-one species, chiefly natives of the East Indies, several of the Cape, and one or two of the Levant. The following are most worthy of notice.

The *Officinale*, or common white jasmine, is well known; a native of India, the flowers white and odorous.

The *Fruticans*, having a shrubby stem, rising about ten feet high, with yellow flowers, succeeded frequently by berries of a black hue. A native of the Levant.

The *Humile*, or common yellow jasmine, having yellow flowers, sometimes succeeded in our own country by berries.

These are most readily propagated by suckers or layers. Some of the other species may be propagated by inarching upon the common white jasmine.

The smell of the white jasmine is very well imitated by storax: we suspect that the *essence of jasmine*, found in the shops, is a distilled spirit from this aromatic gum.

JASPER, or *Jaspis*, a precious stone, consisting of silica, alumina, oxide of iron, magnesia, and potash. It is of different colours: red, green, brown, &c. See **GEM**.

JAUNDICE, or *Icterus*, a disease consisting in a suffusion of bile over the whole surface of the body.

This disease first appears in a listlessness and want of appetite; the patient becoming dull, oppressed, and generally costive. A yellow colour is also very soon after diffused over the white part of the eye, and the nails of the fingers; the urine becomes high coloured, with a yellowish sediment, which imparts a yellow stain to linen; the stools are whitish or clay-coloured. As the disease increases, all the secretions are affected with the yellow colour of the bile, and the whole skin becomes highly yellow. Sometimes there is a violent pain in the region of the liver, which is increased after meals: the pain comes on by fits. If the disease be not subdued, a tendency to putrefaction is evinced; the

colour of the skin changes to a deeper, or black yellow; hæmorrhages issue from various parts of the body, and the patient dies apoplectic. In other cases it degenerates into incurable dropsy. In every view, therefore, of this disease, it is one which requires the best medical attention, which, if possible, should be had at once.

As, however, the jaundice may arise from different causes, it may be useful to observe, that the cases which promise the most certain cure, are those which arise from biliary concretions, or obstructions of the biliary ducts by viscid bile: for the concretions are seldom of such a size that the ducts will not let them pass through, though frequently not without extreme pain; indeed, this pain, though so violent, and almost intolerable to the patient, is the best indication that he is likely to be relieved from the complaint. The coming on of a gentle diarrhœa, attended with bilious stools, together with the cessation of pain, are signs of the disease being cured. Cases, however, frequently occur, where only a slight sensation of uneasiness is produced by the passage of concretions, and where a return to health is soon the necessary result of the discharge of such biliary accumulation. In indurated swellings, or scirrhus of the viscera, it is, we fear, incurable.

The cure should be attempted principally by vomits and exercise. But if no relief follow the exhibition of the second or third emetic, the use of them should be forborn, at least for some time. Of all kinds of exercise, riding on horseback is most to be depended on in this disease: and in order to its being effectual, it should produce as much agitation of the body, and particularly of the stomach and bowels, as the patient can bear. Cathartics are also useful; but they must not be of too drastic a nature. Anodynes, and the warm bath, may be also used with advantage.

The diet of persons affected with jaundice, should be light, cool, and diluent, consisting chiefly of ripe fruits and mild vegetables. Raw eggs have also been taken with great advantage.

The mind should also be kept serene and cheerful.

JAUNDICE OF HORSES, is by far, riers usually called the yellows; it is known by a yellowness of the eyes and mouth, accompanied with dulness and lassitude. Sometimes it is attended with costiveness, more commonly with purging. When costiveness is present, give an aperient ball every morning, until moderate purging is produced; if the bowels be lax, a cordial ball should be given every morning. See *below*. The horse's strength should be supported by infusions of malt and water gruel.

The aperient ball: Take of calomel half a drachm; of aloes one drachm; of Castile soap two drachms; of rhubarb three drachms; let them be made into a ball with syrup, for one dose.

The cordial ball: Take of calomel and opium, of each one drachm; of columba-root powdered, three drachms; powdered ginger half a drachm; of syrup, enough to form the ball, for one dose.

JAWS, or *maxillæ*, in anatomy, the two bones which form the opening of the mouth. The *maxilla inferior*, or lower jaw, may, in its figure, be compared to a horse-shoe; it is at first composed of two distinct bones; but these, soon after birth, unite together at the middle of the chin, and form one bone. The *maxilla superior*, or upper jaw, consists of two bones, which generally remain distinct through life. These bones not only serve to form the cheeks, but likewise the palate, nose, and orbits; beside their union with each other, they are connected with the greatest part of the bones of the face and cranium. Amongst other important uses of these bones, they form the alveoli, or sockets for the teeth. See **TEETH**.

The lower jaw is liable to various disorders: the *dislocated* and *fractured* jaw, requires the aid of the surgeon: for the treatment of **LOCKED JAW**, see **TETANUS**.

Jay. See **CROW**.

JEALOUSY, that peculiar uneasiness which arises either from the fear that

JEL

some rival may rob us of the affection of one whom we greatly love, or from the suspicion that he has already done it. It is sometimes applied in a more extensive signification ; and is, in every case, the offspring of individual covetousness. It is, therefore, at all times, an exceedingly selfish passion." The first kind often accompanies love, before it is in possession of its object ; the latter is often unjust, generally mischievous, always troublesome. Jealousy in the extreme, contains a complication of the most tremendous passions which can agitate the human breast. With the jealous, every token of innocence is interpreted into proofs of guilt, and every instance of affection as a mark of insulting hypocrisy. The cruel selfishness of jealousy, is almost always sure to destroy the affection of the party concerning whom the jealousy is evinced : hence the folly and weakness of an indulgence in this tempestuous passion. The affections are not to be commanded by power, nor controlled by violence ; he, therefore, who has even just ground for his suspicions, may be assured, that his violence, reproaches, and unkindness, are the surest way to confirm that alienation concerning which he is so tremblingly alive. It were to be wished, that this degrading passion could be banished from the human mind.

JELLY, a form of food, prepared either from the juice of ripe fruits, boiled to a proper consistence with sugar ; or, by boiling the flesh, bones, &c. of animals, in water, thereby dissolving the gelatine which they contain, and forming a substance more or less solid.

Vegetable jellies are cooling and astringent, and are agreeable varieties, when not too sweet, in the food of the sick and convalescent.

Animal jelly, or gelatine, when deprived of its water, is similar to glue ; when mixed with a certain portion of water it is called size, and with a still further proportion, jelly. See **GELATINE**, **HARTSHORN-SHavings**, and **ISINGLASS**.

JOY

Jerusalem-artichoke. See **ARTICHOKE**.

Jessamine. See **JASMINE**.

Jesuit's-bark. See **PERUVIAN-BARK**.

JET, a bituminous substance of a compact deep black colour, shining internally, and burning with a greenish flame. It is found in various parts of Great Britain, particularly at Lowestoft, in Suffolk ; and also in France, Spain, and Germany. When heated, or rubbed hard, it will attract light bodies. Its specific gravity is 1.259. It admits a high polish, and is used for small boxes, buttons, beads, &c. It is used as an ingredient in varnishes ; mixed with pulverized lime, it yields a hard and durable cement.

JOHN'S-WORT, **St. JOHN'S WORT**, or *Hypericum*, a genus of plants, comprising eighty-seven species, scattered over the globe, of which nine or ten are common to our own country. The *perfoliatum*, one of these, was formerly used medicinally, but is of no importance. One of the most beautiful species is the *hircinum*, or Fetid St. John's wort, a native of Sicily. An oil was formerly prepared from the leaves of St. John's wort, but its place is now commonly supplied with olive-oil, tinged with some colouring material.

JOINT, the place where two or more things are united. In anatomy, it is usually applied to the junction of bones, and then it is called articulation. See **SYNOVIA**.

Jonquil. See **NARCISSUS**.

JOURNAL, **DIARY**, or *Day-book*, a register or account of particular circumstances occurring daily. See **BOOK-KEEPING**.

Journal also denotes a periodical publication, whether daily, weekly, monthly, or quarterly. It is applied to newspapers, and various literary and scientific works. See **PERIODICAL PUBLICATIONS** and **NEWSPAPERS**.

JOY, that vivid pleasure experienced in the mind, on the immediate reception of something peculiarly grateful, or of something obviously productive of an essential advantage to our present or future well-being and happiness. A

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sudden and instantaneous translation from extreme anxiety, or the depths of distress, to an exalted state of happiness, constitutes the highest possible degree of joy. Joy is, perhaps, one of the least controllable of all the human passions; yet, that it requires control nothing can be more evident: for excess of joy has, occasionally, produced death. In youth, this passion is extremely vivid; but the sober reflexions of experience will teach us, that the boisterous passions are not those which most tend to genuine happiness. In the communication of unexpected good fortune, or other events calculated to excite great joy, in persons whose minds are in a state of great mental depression from opposite causes, great care and circumspection are necessary: possibilities should be first presented to them, then probabilities, and lastly, after due time and precaution, the actual reality.

JUDGMENT, that faculty of the mind, by which it compares the relation between two or more ideas. See **MIND**, and **REASON**.

JUGULAR VEINS, the veins which run from the head down the sides of the neck. They are divided from their situation, into external and internal. Both jugulars unite, and form with the subclavian veins, the superior vena cava, which terminates in the superior part of the right auricle of the heart.

JUICE, the liquor or sap of plants and fruits.

The juices of plants are of great importance, both as food and medicine. See **CIDER**, **WINE**, **OPIUM**, &c. &c.

JULAP, or **JULEP**, a term formerly applied to liquid medicines, not so thick as a syrup. The term *mixture* now supplies its place.

July flower clove. See **PINK**.

JUNIPER, or *Juniperus*, in botany, a genus consisting of twelve species, chiefly natives of the south of Europe, a few of Asia and America. The following are of most importance:

The *Communis*, or Common juniper, a native shrub of the mountains of our own country. The tops and berries

are directed in our pharmacopœias, but the latter are usually preferred. The berries require to remain two years on the tree before they are fully ripe. The greater quantity of those used in this country, are brought from Germany, Holland, and Italy; the Italian berries are the best.

Juniper berries are diuretic and cordial, and are given in dropsical affections. They are rarely given in substance, except to horses and cattle. An infusion made with three ounces bruised, and a pint of boiling-water, may be taken to the quantity of a tea-cup-full, every three or four hours. The dose of the berries, when taken, being rubbed with sugar, is from one scruple to a drachm.

The *essential oil of juniper*, is carminative, diaphoretic, and diuretic. It is sometimes given in dropsy; and may be added to fox-glove, when it is given in the form of pills. The dose is from two drops to ten, combined with water, by means of sugar or mucilage.

This oil, when genuine, is completely soluble in spirit of wine. It is almost always adulterated with oil of turpentine. For the method of detecting this fraud see **BAY**.

The *compound spirit of juniper*, is made with one pound of bruised juniper berries, one ounce and a half of each, caraway seeds and fennel seeds bruised, and a gallon of proof spirit, with an addition of water sufficient to prevent burning; after macerating the whole together in the still for twenty-four hours, a gallon must be distilled over by a gentle heat.

This spirit is a grateful and useful addition to various stimulating infusions and mixtures, where diuretic effects are desired to be produced. The dose, if given alone, which it scarcely ever is, is from one fluidrachm to half a fluid-ounce.

The resinous tears which exude from this tree are called *gum juniper*, or *sandrac*. It is almost totally soluble in alcohol, with which it forms a white varnish, which dries speedily. Reduced to powder, it is called *gumme*, and be-

ing rubbed on paper, parchment, &c., prevents ink from sinking into them. Its medical virtues are of no importance.

The *Sabina*, or Savin, is a native shrub of the south of Europe, of which there are several varieties. It is cultivated in our gardens. The male and female flowers are on different plants. The leaves and tops of savin have a strong disagreeable odour, and a bitter, hot, acrimonious taste. Both water and alcohol extract its active principles.

Savin is a powerful stimulant, possessing diaphoretic, emmenagogue, and anthelmintic properties. It has considerable effect on the uterine system; but it is only suited to those menstrual obstructions unattended with fever. In plethoric habits, its use should be preceded by repeated bleedings; at all times, its internal exhibition requires caution.

As an external local stimulant, or escharotic, the dried leaves in powder, are applied to warts, flabby ulcers, and carious bones; and the expressed juice diluted, or an infusion of the leaves, as a lotion, to gangrenous sores, the itch, and scald head; or mixed with lard and wax, as an issue ointment. See **BLISTER PERPETUAL**.

The dose of the powdered leaves is, from five to fifteen grains, two or three times a day; of the *essential oil*, which contains all the virtues of the plant, from two to six drops rubbed with sugar.

An *extract of savin*, prepared in the same manner as the simple extracts, is kept in the shops, the dose of which is from ten grains to half a drachm, in pills; but its efficacy is very doubtful.

The *Virgiliana*, Red cedar, or Virginian cedar, is a native tree of North America, growing thirty or forty feet high, and branching pyramidally from the root to the summit.

The *Thurifera*, or Frankincense juniper, with large berries, of a black hue when ripe. From this and several other species, it was long supposed that the *frankincense* of the shops was only obtained; but this is a mistake,

See **FRANKINCENSE**. This tree reaches about twenty feet in height, and is a native of the south of Europe.

The *Lycia*, is also a native of the South of Europe, rising about twenty feet high. It was formerly supposed that this tree produced the *olibanum* of the shops; but this is also a mistake. See **OLIBANUM**.

All the species of juniper may be easily propagated by seeds; but the savins are more generally increased by cuttings and layers.

JURY, a certain number of persons sworn to inquire into and try some matter of fact, and to declare the truth upon such evidence as shall be laid before them. *Trial by jury*, is the Englishman's birthright; and is indeed his best defence against the encroachment of all oppression and arbitrary power.

Juries are of two kinds, special and common. They are also distinguished into petty and grand juries.

Every grand jury-man must be a freeholder. The grand jury ought not to consist of an indefinite number: no more ought to be sworn than twenty-three. Grand juries are generally composed of some number between twelve and twenty-three. Their decision is determined by a majority. The business of grand juries is, to receive presentments, or indictments, of roads, bridges, &c. out of repair, and to receive indictments, and examine the witnesses, for the prosecution only, relative to assaults, nuisances, misdemeanors, felonies, treason, &c. If, from their examination of the witnesses for the prosecution, they do not find a *true bill*, the prosecution is, of course, dropped; but if they find a true bill, the person against whom the true bill is found, is put upon his trial, before either a petty jury, or a special jury. The grand jury at the assizes, is generally composed of magistrates.

The grand jury at the quarter sessions are freeholders: and are such persons as are usually the common jurymen in nisi prius causes, or questions of property or damages, between individuals.

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Every special jury, as well as every petty, or common jury, must consist of twelve men, and in their verdict they must be unanimous.

Special juries consist, or should consist, of men of property, probity, and information, who are supposed to know more of the business for which they are chosen, than common jurymen. They are specially paid for their attendance, generally, we believe, one guinea each, for every trial on which they may happen to be. Some difficult questions of commerce, &c. seem properly enough, referable to a special jury. But questions of general polity, concerning which most men are competent to form a judgment, are very improperly referred to special juries; for such, common juries are much better adapted. The qualifications for common jurymen are very various. In general, however, a common jurymen must have a fixed place of residence, and some property; but it is not necessary that it should be in land. Juries were formerly considered as only competent to decide on the

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facts submitted to their consideration, but latterly, it has been considered, as strictly within their province, to judge of the law as well as of the fact.

Jurors are punishable for sending for or receiving instructions from either of the parties, concerning the matter in question.

JUSTICE, that virtue by which we give to every one what is his due. See **RIGHT**.

JUSTICES OF THE PEACE, are persons appointed by the king's commission to attend to the peace of the county where they dwell. Sheriffs, coroners, attorneys, and proctors, may not act as justices of the peace: but clergymen may. It admits of considerable question, however, whether a clergyman's acting as a justice of the peace be either accordant with the general spirit of our laws, or the independence and purity of the clerical character itself.

The office of a justice of the peace is of considerable dignity and importance.

